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A PRACTICAL TREATISE ON THE DISEASES OF WOMEN.

BY

T. GAILLARD THOMAS, M.D.

Professor of Diseases of Women in the College of Physicians and Surgeons, New York.

EXTRACT FROM THE AUTHOR'S PREFACE.

"The Author's object has been to write a practical work, not an Encyclopedia; to record views and methods which recommend themselves on account of their merit, not merely of their novelty. So rapidly do new things present themselves in this active department of medicine, however, that it must be stated that some innovations which apparently possess merit have been left unmentioned because sufficient time has not elapsed for their trial."

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BY

SAMUEL W. GROSS, A.M.M.D.

Lecturer on Venereal and Genito-Urinary Diseases in the
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LONDON, 82, HIGH HOLBORN.

A

PRACTICAL TREATISE

ON THE

DISEASES OF WOMEN

BY

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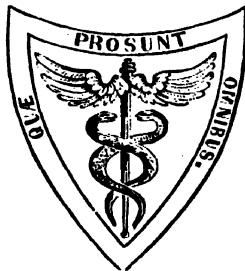
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HONORARY MEMBER OF THE SOUTH CAROLINA MEDICAL ASSOCIATION AND OF THE
LOUISVILLE OBSTETRICAL SOCIETY.

FIFTH EDITION,

ENLARGED AND THOROUGHLY REVISED.

CONTAINING TWO HUNDRED AND SIXTY-SIX ENGRAVINGS ON WOOD.



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COLLINS, PRINTER.

TO

JOHN T. METCALFE, M.D.,
NEW YORK.

MY DEAR DOCTOR:

I DEDICATE to you the fifth as I have done the four previous editions of this work. If its merits have grown with time as steadily as our friendship has done, I shall feel fully satisfied with the results of my labors; and if it receive from my professional brethren only a tithe of such kindness as that for which during a quarter of a century I have been indebted to you, I shall be grateful indeed.

Sincerely your friend,

T. GAILLARD THOMAS.

PREFACE TO THE FIFTH EDITION.

TWELVE years have elapsed since the publication of the first edition of this work. In that time four successive editions have appeared, and its author, recognizing the great advances which during that period have been made in gynecology, fully appreciates the fact that a text-book which aspires to meet the demands of 1880 must of necessity be very different from one which was offered to supply those of 1868. He has devoted two years of labor to the endeavor to bring this edition to the level of the present state of the science of which it treats; with what success the reader will judge.

That many new views, new methods, and new remedies which have of late years been lauded in gynecology pass unmentioned will at once be apparent. The author's object has been to write a practical work, not an encyclopedia; to record views and methods which recommend themselves on account of their merit, not merely of their novelty. So rapidly do new things present themselves in this active department of medicine, however, that it must be stated that some innovations which apparently possess merit have been left unmentioned because sufficient time has not elapsed for their trial.

To the medical profession in America the author would express his sincere thanks for numberless acts of kindness,

encouragement, and courtesy, which have stimulated his ambition to improve a work which has met their generous endorsement and lightened the labor which has attended his efforts.

The kindly reception of previous editions of this work in Europe, as evidenced by its translation into German, French, Italian, and Spanish, has given the author sincere gratification, and he avails himself of this opportunity of thanking the translators for the very careful manner in which they have performed their work, and the uniform courtesy which they have shown to him.

Upon two points he would ask the lenient judgment of his readers: first, the mechanical contrivances for the treatment of flexions of the uterus, which should be honestly tried before being judged; and second, the diagrams illustrative of the perineum and its injuries, which to one who has not carefully considered the subject may appear exaggerated.

For the index of this edition, which the author regards as a good type of what an index should be, he is indebted to his friend Dr. S. Beach Jones.

NEW YORK,

294 Fifth Avenue, Sept. 26, 1880.

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THE DISEASES OF WOMEN.

CHAPTER I.

HISTORICAL SKETCH OF GYNECOLOGY.

At the present day, when so much attention is being paid to the diseases peculiar to women, it becomes almost necessary that a chapter upon the history of the subject should precede others of a more practical character in a systematic work. A knowledge of what has been accomplished in reference to any subject, and what was known concerning it in previous ages, cannot fail to interest the student, and render him more capable of appreciating recent advances. In this way, too, a taste for the study of ancient literature may be inculcated, and many a useful hint, many a suggestive statement may be met with which will germinate for the common good. Some of the most valuable contributions to modern gynecology will be found to be foreshadowed, or even plainly noticed, by the writers of a past age, and afterwards entirely overlooked. As examples may be cited, the use of the uterine sound, sponge-tents, dilatation of the constricted cervix, and even the speculum itself. Indeed, we need not seek in ancient literature for illustrations of this fact, for nowhere could a more striking one be found than that of so valuable a procedure as Sims's operation for vesico-vaginal fistula being fully described in every detail in 1834, and so completely forgotten in twenty years as to be accepted as entirely new at the end of that time.

There can be no doubt that a knowledge of medicine was possessed by the ancient Egyptians, whose literature has only within the last century been opened to profitable investigation. Until 1799, all concerning it was enshrouded in darkness. At that time a French engineer, while throwing up earthworks at Rosetta, discovered an insignificant looking stone, which has since furnished the wanting key, its inscription being written in Greek as well as in the ancient hieroglyphics. Since then valuable papyri have been, thanks to the researches of De Sacy, Akerblad, and Champollion, fully and satisfactorily deciphered. The data thus obtained

carry the knowledge of medicine back to a period previous to 3000 years before Christ, and evince an attempt at rational treatment, Egyptologists declare, which surpasses that displayed by the early Greeks. The "papyrus of Berlin," the earliest record of medicine, is singularly free from superstitious doctrines and use of charms in the treatment of disease, which at a later period crept in. Pliny informs us that in the times of the Ptolemies a medical school was established at Alexandria, and dissections of the human body legalized. The Egyptians appear to have been especially skilful as oculists, and it is probable that attention was paid to the diseases of women, for among the six medical books in the collection Thoth, consisting of forty-two volumes, one devoted to this subject is particularly mentioned. Some modern Egyptologists have even stated that among the hieroglyphics the shape of the uterus can be recognized. But Egyptology is certainly to-day only in its first infancy. Hope that the future may bring forth a great deal more than the past has done with reference to it may be further founded upon the fact that Herodotus¹ distinctly announces that specialties existed among this primeval people. "Here," says he, "each physician applies himself to one disease only, and not more. All places abound in physicians; some for the eyes, others for the head, others for the teeth, others for the parts about the belly, and others for internal diseases."

From Biblical literature, which is so abundantly at our command, we learn almost as little upon our subject; and from the time of Moses, about 1500 B. C., to that of Hippocrates, 400 B. C., testimony of precise knowledge upon it is almost entirely wanting. This is the more astonishing when we bear in mind that in the Talmud are found evidences of a great deal of knowledge concerning the Cæsarean section and other subjects in obstetrics; that in the books of Moses we find intelligent reference to the hymen and menstruation; and that in the New Testament we see St. Luke, a physician of the time, recording the fact of "a woman having an issue of blood twelve years, which had spent all her living upon physicians, neither could be healed of any," etc.

Although we know so little concerning the knowledge possessed upon this subject by those who preceded the Greeks in civilization, we cannot doubt that they did much to instruct the latter in this as in other departments of learning. History everywhere records the fact that the Greeks were instructed by the Egyptians, as the Romans subsequently were by the Greeks.

With our present knowledge of the literature of the most ancient civilizations, we must admit that with the writings of the Greek school, founded by Hippocrates, commences the history of gynecology. Three volumes were written upon the subject by authors contemporaneous with Hippo-

¹ Book ii. c. 84.

crates. They have ordinarily been attributed to him, but Dr. Francis Adams, the translator of the works of Hippocrates for the Sydenham Society, declares them to be, "ancient but spurious, whose author is not known." In these books the subjects of metritis, induration, menstrual disorders, displacements, etc., are discussed. Aretæus, Galen, Archigenes, and Celsus, who probably lived in the first and second centuries, all treated of gynecology; the first describing the vaginal touch, the varieties of leucorrhœa, and ulceration of the womb: while the second makes the first allusion on record to the speculum vaginæ, as being a distinct instrument from the speculum ani, and the third gives a description of peri-uterine cellulitis which shows him to have been at least familiar with the fact that the tissues immediately connected with the uterus were liable to suppurative inflammation, the purulent products of which discharge themselves through the vagina or rectum.

Soranus, the younger, made important contributions to gynecology. He was educated at Alexandria, and went to Rome in the year 220 B. C., where he wrote his celebrated work *De Utero et Pudendo Muliebri*. He is the oldest historian of medicine, and the biographer of Hippocrates. His accurate descriptions of the sexual organs were much admired. He takes pains to assure his readers that he dissected the human cadaver, and not monkeys, as did Galen and others. He compared the form of the uterus to a cupping-glass, showed the relation of this viscus to the ilium and sacrum, and made known the changes which the os undergoes during pregnancy. He attributes proclivencia to a separation of the internal membrane of the uterus, speaks of the sympathy which exists between the womb and the mammary gland, and describes the hymen and clitoris. He understood digital exploration and the use of the uterine sound and vaginal speculum. Many of the ancient writers confounded the uterus with the vagina; he distinguished the one from the other very clearly. Soranus likewise differentiated pregnancy from ascites and solid tumors, and laid stress upon the absence of tympanites and fluctuation in solid tumors as a means of distinguishing them from ascites, in which they are present.

From this time for centuries, there is abundant evidence that the study of the subject was pursued with vigor, but so many of the works of the authors of those periods exist only in fragments, and so many are strongly suspected of being fictitious, that we pass them over to stop at the faithful compilation of Aëtius,¹ who flourished at Alexandria in the sixth century after Christ. His works, compiled in the great library at Alexandria, contain a digest of what was known and done by his predecessors and contemporaries, and offer the fullest and most reliable evidence concerning

¹ I am indebted to the library of the New York Hospital for an opportunity of fully consulting this and other rare works which were accumulated by the late Dr. John Watson.

the knowledge of those times. In quoting him, and his immediate successor, Paulus Ægineta, who was also a compiler, though a far less conscientious one, I must be understood as recording, not the views of these individuals, but those entertained by physicians who lived from the time of Hippocrates to the time of their writing, a period of about one thousand years.

In his 16th book Aëtius treats of the diseases of women in such a manner as to leave no doubt as to his having had a thorough knowledge of many disorders and means of investigation and treatment, which, being rediscovered thirteen hundred years afterwards, have, in many instances, been regarded by us as entirely new. Thus he speaks of the speculum, sponge-tents, peri-uterine cellulitis, medicated pessaries, vaginal injections, caustics for ulcers of the cervix, dilatation of the constricted cervix, a sound for replacing the uterus, etc.

As I have already stated, Soranus before Christ, and Galen in the second century, speak of the speculum vaginæ; but Aëtius still more clearly mentions it, and gives rules for its introduction, which are copied almost verbatim by Paulus without acknowledgment. The use of sponge-tents he very fully describes, telling of their mode of preparation, and even advising that a thread should be passed through them for removal, and that a succession of them should be employed till complete dilatation is accomplished.¹ The importance of injections, the douche, hip-baths, and application of caustics for ulcers of the cervix, he also dwells upon, and advises the dilatation of a constricted cervix by means of a tin tube. The variety of vaginal injections in use among the Greeks was as great as that of to-day. As astringents, pomegranate rind, galls, plantain, rose oil, alum, sumach, etc., were employed; and as emollients, linseed, poppies, barley, etc., exactly as we use them now. They relied to a great extent upon the use of medicated pessaries in the cure of ulcerations and inflammatory engorgements, employing wool covered with wax, or butter mixed with saffron, verdigris, litharge, etc. Octavius Horatianus even goes so far as to advise a mixture of arsenic, quicklime, and sandarach in very foul ulcers. In addition to injections and pessaries, Aëtius mentions the use of vapor, medicated or simple, conducted to the cervix by means of a reed passed up the vagina.

The use of a uterine sound, passed into the uterus and employed as a repositor, is likewise alluded to by this author, in a passage where he advises that displacements of the uterus should be corrected *specillo et digito*.

Paul of Ægina, who succeeded Aëtius, alludes distinctly to the speculum as an instrument in general use before his time. "If, therefore," says he, "the ulceration be within reach, it is detected by the dioptra; but if

¹ Dr. H. G. Wright, Med.-Chir. Rev., lxxi.

deep seated, by the discharges." And again, "The person using the speculum should measure with a probe the depth of the woman's vagina, lest, the tube of the speculum being too long, it should happen that the uterus be pressed upon."

It is curious to see how, even in many minor matters, the ancients anticipated discoveries which our contemporaries have brought forward as entirely new. For example, the air-pessary, made so popular in France and other countries by Gariel, is described and recommended by the Greeks. Colombat¹ declares that, "The ancient Greek physicians made use of pessaries like those just mentioned (air pessaries), of the form and length of the male organ, which is the reason why they are called *πριαπιστῶα*, or priapiform pessaries." Albucasis, in 1104, describes herpes uterinus; and uterine hemorrhoids are alluded to by Paulus Ægineta² in this explicit manner: "Hemorrhoids form about the mouth and neck of the uterus, which will be discovered by the speculum." And thus it is with so many other modern suggestions, that the student of ancient medical literature is most willing to admit the truth of the proposition, formulated by Aristotle over two thousand years ago, that "probably all art and all wisdom have often been already fully explored and again quite forgotten."

The learning of the Greek School was appropriated by the Roman, which was an offshoot from it, as the writings of Celsus, Aspasia, Moschion, and Antyllus abundantly testify. But the knowledge of the schools of Greece and Rome was destined to be scattered abroad. At the period of the subjugation of Egypt and the destruction of the celebrated library at Alexandria by the Saracens, A. D. 640, it passed as a trophy of war into the hands of the Moslem invaders. "In a few centuries the fanatics of Mohammed had altogether changed their appearance," says the learned Draper.³ "When the Arabs conquered Egypt, their conduct was that of bigoted fanatics; it justified the accusation made by some against them, that they burned the Alexandrian library for the purpose of heating the baths. But scarcely were they settled in their new dominion, when they exhibited an extraordinary change. At once they became lovers and zealous cultivators of learning." The physicians of Alexandria were greeted by them as instructors, and from the seed thus planted sprang the Arabian School. With other information, of course, they gained that pertaining to gynecology, but, the Mohammedan laws forbidding the examination of women by one of the opposite sex, the study languished in their hands; and although Rhazes, Avicenna, and their successors copied from Greek writers upon it, a want of zeal, due to want of personal observation and

¹ Diseases of Females, Méigs's translation, p. 152.

² Sydenham Society's edition, vol. i. p. 645.

³ Intellectual Development of Europe, p. 285.

experience, allowed a retrograde movement to occur which left the subject enveloped in darkness for centuries afterwards. Albucasis, one of the last of this school, flourished at the end of the eleventh century, and after him, although from time to time writers of greater or less merit on diseases peculiar to women appeared, nothing worthy of special note occurs, except the occasional allusion to the speculum, which had evidently fallen almost entirely into disuse.

We have then sufficient data to warrant the belief that the physicians who flourished from the foundation of the Greek School of Medicine, 400 years before Christ, to the dispersion of the Alexandrian School by the Saracens, 640 years after Christ, were well informed in gynecology, and were familiar with means of investigation which were subsequently lost, or ceased to be appreciated. They fully sustain the statement of the English translator of the works of Hippocrates, that "they furnish the most indubitable proof that the obstetrical art had been cultivated with most extraordinary ability at an early period."

It must not, however, be supposed that the knowledge of the ancients was of the same exact and scientific nature as that which has prevailed since the modern introduction of the speculum. He who seeks in this literature for distinct and lucid pathological data will surely meet with disappointment. They did not sufficiently separate inflammations of the puerperal and non-puerperal uterus, confounded affections of that organ with those of the pelvic areolar tissue, and made no distinctions between diseases of the mucous membrane and parenchyma, nor the morbid states of the neck and body. Among their remedies were numerous articles which to-day we regard as inert or even injurious, as pigeon's dung, woman's milk, stag's marrow, etc.; and Aëtius and Paulus seem to have been as partial to the "grease of geese" as our lower classes are at present. To make amends for this many a valuable and suggestive thought may be gleaned with reference to diagnosis and treatment. This has certainly been proved by our experience of the past, and we have no evidence to warrant the belief that these rich mines have yet been exhausted.

The learning of the Arabians was in time, like that of the rest of the world, gradually enshrouded by the ignorance and superstition of the period termed the "Dark Ages." During that time many of their writings, as well as those of the Greek and Roman schools, were destroyed or lost; but as society emerged from the darkness which overshadowed its intelligence, we see the thread at once taken up and followed, though languidly and without vigor, to the beginning of the nineteenth century.

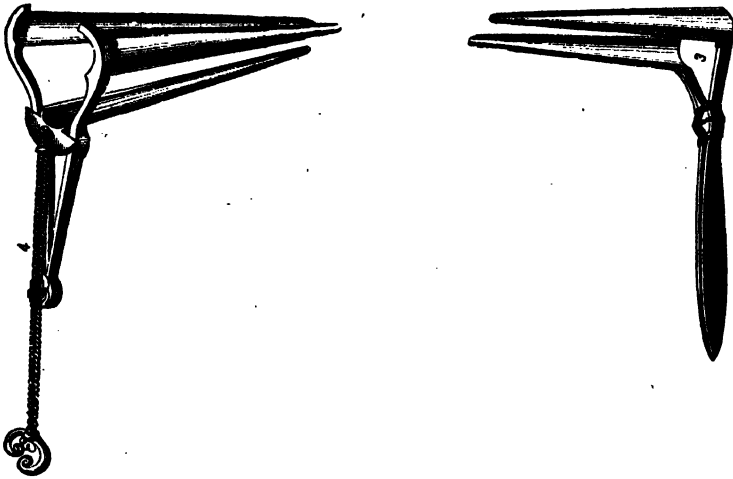
Toward the middle of the seventeenth century we find very special and full allusion made to the speculum and its uses by Ambrose Paré and Scultetus; the instrument being well represented by diagrams, with descriptions attached.

"Fig. 1," says Scultetus, "is an instrument which they call 'speculum

ani, vaginæ et uteri,' in that by its help ulcers of the rectum, vagina, and uterus may be seen, to be carefully observed, according to their extent and kind."

Aëtius and Paulus evidently knew of a tubular speculum, since they say, "lest the tube of the speculum be too long," etc.; but Scultetus, as

FIG. 1.



Ancient valvular specula. (Scultetus.)

already shown, figures a bi-valve and quadri-valve, closely resembling those in our hands at present. It is worthy of mention, in this connection, that there is now preserved, in the Museo Borbonico at Naples, a bi-valve speculum which was removed from the ruins of Pompeii.

It has already been stated that Aëtius makes reference to a sound for replacing the uterus. This is by no means the first notice of this useful instrument, for it is repeatedly mentioned by Hippocrates. One of six passages from writings imputed to him, I translate from the work of Monsieur T. Gallard.¹

"Treatment for rendering fertile a sterile woman; attention is directed to that part which consists in replacing a displaced neck of the uterus."

"Just after the patient has taken a bath and a fumigation, open the uterine mouth and replace it at the same time, if necessary, with a sound of tin or lead, at first small in size, then larger, if it passes, until the difficulty seems remedied; dip the sound in any emollient preparation which may be thought best, and which should be rendered liquid by melting."²

¹ Leçons Cliniques sur les Maladies des Femmes, p. 115.

² Hippocrates Œuvres Complètes. Tome vii. p. 379.

A recent biographer of Harvey¹ remarks, "That the older writers looked upon the vagina and uterus as one organ, and when they spoke of the former, they either called it 'uterus' or 'cervix uteri.' What we now call the cervix uteri, they called the internal cervix; and, as far as my reading goes, no operative procedure upon this part of the womb, when in its unimpregnated state, had ever been attempted before Harvey invented his dilator, and used intra-uterine injections of sulphate of iron."

If the passage recently quoted does not carry conviction that the manipulations recommended have reference to the neck of the uterus and not to the vagina, the following, from the same source, will do so:—

"*Treatment of cases in which the seminal fluid is not retained on account of an imperfection of the uterine orifice.*

"In those cases in which seminal fluid escapes immediately after intercourse, the cause is in the mouth of the womb. They should be treated thus: if the orifice is very much contracted it should be dilated with small bits of pine wood and lead." We cannot suppose that in cases in which intercourse was practicable any contraction below the os externum uteri could exist, rendering such dilatation necessary.

* Professor Simpson³ asserts that among the ancients the sound was resorted to only for dilatation of the cervix, and not for exploration and measurement. The *specillum* mentioned by Aëtius was employed for reposition, while Hippocrates advises the use of a sound hollowed out on one side, and covered by medicated ointments: this, "the operator introduces into the uterine orifice, and pushes onwards so as to make it enter the interior of the uterus. When the medicinal substance is melted, the sound is withdrawn."⁴ In 1657, a probe, used as we now employ the uterine sound, and intended especially for uterine exploration, was actually described by Wierus,⁵ and alluded to by Hilken, Cooke, and others. In 1771 it was employed by Levet⁶ for measuring the length of the uterine cavity in hypertrophy of the cervix, and subsequently as an aid to diagnosis by Chambon, Vigorous, and Desormaux.

As we pass in review the chief works which appeared upon our subject in the eighteenth century, we find frequent mention of the speculum, which is spoken of as a matter of course in the treatment of uterine affections, and yet was evidently not so employed as to render it really a valuable aid in diagnosis or treatment. This constitutes one of the most curious episodes met with in the history of any discovery with which we are acquainted. A most simple and useful instrument was not only well known in ancient times, and subsequently fell into disuse, but fell

¹ Obstet. Journ. Great Britain and Ireland, vol. i. p. 26.

² Gallard, op. cit., p. 116.

³ Obstet. Works.

⁴ Gallard, op. cit., p. 116.

⁵ Dr. H. G. Wright, Diseases of Women, Eng. ed., vol. i. p. 135.

into disuse without having ever been really forgotten. It was described by successive writers up to the nineteenth century in language as distinct as words could make it; and yet not only did they who read, but they who wrote it, not comprehend its meaning or appreciate its significance. Like the Indians possessed of the diamond, all saw and yet none valued. How could Ambrose Paré, for example, writing in 1640, have indicated its use more clearly than when he tells us, in chapter xix., that ulcers of the womb may be recognized, "by the sight, or by putting in a *speculum*?" In a copy of his works, in the library of Prof. W. A. Hammond, the word *speculum* is italicized in this sentence. Scultetus, as we have seen, not only described, but figured the instrument in 1683.

In 1761, Astruc, "Royal Prof. of Physic at Paris," in describing occlusion of the vagina and obstruction to the menstrual flow, says: "There is nothing more required than to examine the vagina by introducing the finger into it, rubbed previously with oil or pomatum; but, if that be not sufficient, a *speculum uteri* may be used, or some other more simple instrument for dilatation, in order to be able, by means of the dilatation of the vagina, to judge by the sight of what the touch could not decide."

In 1801, forty years after this, Récamier is supposed by many to have invented the speculum. Most assuredly it was not for the invention, but for the regeneration of an instrument which had been curiously lost sight of, that the world was indebted to this great man, who was really the founder of the modern school of gynecology. Guided by the advice found in many works which his library must have contained, works with which to suppose him not to have been perfectly familiar would be to cast a slur upon his medical research, he employed a *speculum vaginae* in 1801. Like his predecessors, he did not appreciate the great results which were to flow from it; nor does he appear to have regarded himself as having invented it. It was not until 1818 that he introduced it to the profession, and gave it its place as a valuable addition to science. Can any one suppose that it could have required seventeen years of experimentation and study for a man with the talent of Récamier, to have applied this simple and useful instrument to purposes of utility? Is it not more likely that the experience of seventeen years taught him the full value of the instrument? The credit which belongs to Récamier is not that of an inventor, but that which is equally great, of having recognized the value of what was well known, but not appreciated by his predecessors and contemporaries.

Even before this fortunate revival, as the eighteenth century approached its close, the glimmer of the new era which was about to dawn could clearly be detected in the advanced views which were promulgated by Garangeot and Astruc in France, and Denman, John Clark, and Hamilton in England. The early part of the nineteenth century found the field occupied chiefly by Sir Charles Clarke and Dr. Gooch in England, and

Récamier and Lisfranc in France. These were not the only eminent writers of that time, but they were unquestionably those who chiefly moulded professional opinion.

Even at that period gynecologists divided themselves into two parties, which may be said to have coalesced only within the last decade. In England the feeling was strongly in favor of regarding the local disorder as the result and not the cause of concomitant constitutional derangement; while in France the uterine disease was viewed as the main element, and the general condition regarded as dependent upon and resulting from it.

The great advantages of the speculum secured its rapid adoption in France. More slowly it forced its way, in spite of many prejudices, in Great Britain, and before a great many years had passed, it was, throughout the civilized world, placed upon an enduring basis as one of the many boons bestowed by medicine upon humanity. The way being opened for investigation by this instrument, new aids to diagnosis and treatment were rapidly brought forward. In 1826, Guilbert read before the Academy of Medicine of Paris an essay proposing the application of leeches to the cervix. In 1828, Samuel Lair read before the same body a paper in which he counselled the use of the uterine sound, which had never been utilized. In 1832, M. Melier presented an essay, in which he offered two new suggestions in the treatment of uterine diseases—one, injections into the cavity of the cervix; the other, local applications through the vagina by dossils of lint saturated with astringents, narcotics, etc. His views are quoted extensively by French writers, and Nonat says that the author recognizes, "*avec une franchise qui l'honore,*" that Boyle, Chaussier, Guilleou, and others had a short time before him used similar means. Very curiously neither Melier nor his commentators mention that both these suggestions are made and fully elaborated by Astruc, in his excellent article upon "*Ulcers of the Uterus.*" He describes these applications of medicated charpie very carefully, remarking that it is advisable to "tie a thread to every pledget, in order to draw it out again when it is proper to renew the dressing." And he not only advises injections of water, impregnated with different substances, into the cavity of the womb, but also the juices of plantain, houseleek, nightshade, etc. "For," says he, "as it is of consequence that these injections should enter into the uterus, where the ulcer has its seat, it is proper they should be made by a professor of midwifery, capable of introducing skilfully the end of the canula into the orifice of the uterus," etc.

At this time arose the question as to cancer of the uterus, whether it was the local manifestation of a general blood state, or the result of an inflammatory engorgement long neglected; a question which excited warm discussion, and brought forth the most opposite views.

The ambition of Récamier was not satisfied with exposing the cervix uteri to view. He had the boldness to explore the cavity of the body of

the organ, almost establishing the use of the sound, and even, by means of a species of scoop called a curette, ventured in certain cases to scrape its investing mucous membrane. In addition he described, through one of his students, pelvic cellulitis, and gave the first intimation which modern observers have had of the possibility of pelvic hemocele.

The impulse given by Récamier to gynecology cannot be overestimated, for the instrument which he had rediscovered, and the merits of which he had appreciated, was destined to remove it from the field of speculation and theory, and to place it in that of exact science. From about the year 1820, it began to attract general attention, and to receive the endorsement of the profession.

The subject at that time received more notice in France than in any other country, and for the next twenty years Lisfranc, Boivin, Colombat, l'Heritier, Imbert, and others enriched its literature and advanced its interests. But it was not until towards the end of that time that any really remarkable advance was effected. Then it was that Kiwisch, in Germany, Huguier, in France, and Simpson, in Great Britain, took the lead in their respective countries.

It has been already stated that from the earliest period of medicine the uterine sound had been recommended, and that in the seventeenth, the eighteenth, and the nineteenth centuries this recommendation had been repeated. In spite of this it had never become an instrument of practical value, and even after 1828, when Lair recommended it, it fell entirely out of notice. By a curious coincidence Kiwisch, Simpson, and Huguier, without concert or communication with each other, about the same time urged its adoption, and by vigorous efforts forced it upon the attention of all interested in gynecology as a diagnostic means of inestimable value. Before this time the sound was practically unknown; after it, it held its place as one of our most valuable diagnostic resources.

The labors of Récamier marked an era in gynecology. One scarcely less important was effected by those of Simpson, who, appearing in the field about the year 1843, created an enthusiasm for the department, and gave an impulse to it by the vigor and originality of his writings, and the brilliancy of his contributions. His articles, indeed, first incited the study of uterine displacements in Great Britain, and to his efforts may be traced, in great degree, the interest which has been of late years aroused in that country with reference to uterine pathology. Until this time the subject had attracted very little attention there, and advances which had been made in it were due almost entirely to French pathologists. It is true that the excellent work of Sir Charles Clarke existed; but that warm and zealous interest which has since resulted in so much benefit to gynecology had not then been excited. But Prof. Simpson was not alone in this work. Dr. J. H. Bennet, of London, at that time a young physician, who had for some years served as *interne* in the hospitals of Paris, returned to his

own country imbued with the views which Récamier and Lisfranc had disseminated among a large circle of followers. In 1845, the first edition of his work on Inflammation of the Uterus appeared, and it is safe to assert that no work of modern times, written upon any subject connected with our profession, has exerted a more decided and profound influence. Taking up the matter with a vigor and energy which forced attention, if not conviction, he produced an undeniable impression upon the profession, not only in his own country, but in Germany, France, and America. The chief points insisted upon in his work are these: 1. That inflammation is the chief factor in uterine affections, and that from it follow, as results, displacements, ulcerations, and affections of the appendages. 2. That menstrual troubles and leucorrhœa are merely symptoms of this morbid state. 3. That in the vast majority of cases, inflammatory action will be found to confine itself to the cervical canal, and not to affect the cavity of the body. 4. The propriety of attacking the disease in its habitat by strong caustics.

It is now over a quarter of a century since the appearance of the first edition of Dr. Bennet's work, and since during that period his views have been freely canvassed and vehemently opposed, since too his own experience has ripened and he has had abundant time for more mature reflection, it must be a matter of great interest to know to what extent his opinions have been modified. In the London Lancet appears the abstract of a paper read by him before the British Medical Association in 1870, which serves to contrast his more recent with his former views.

The purport of this paper will be best given in the recapitulation by which the author concludes it:—

"1. I consider that, under the influence of mechanical doctrines pushed to an extreme, uterine displacements are by many too much studied *per se*, independently of the inflammatory lesions that complicate and often occasion them. 2. That the examinations made to ascertain the existence of inflammatory complications are often not made with sufficient care and minuteness, as evidenced by the fact that I constantly see in practice cases in which inflammatory lesions have been entirely neglected, and the secondary displacements alone treated. 3. That inflammatory lesions are often the principal cause of the uterine displacements through the enlargement, and increased weight of the uterus, or of a portion of its tissues, which they occasion. 4. That when such inflammatory conditions exist, as a rule they should be treated and cured, and then time given to nature to absorb morbid enlargements before mechanical means of treatment are resorted to."

Soon after the appearance of Dr. Bennet's work, a discussion sprang up between its author on one side, and Drs. Robert Lee, West, and Tyler Smith on the other, with reference to the true character of ulceration of the neck; Dr. Bennet supporting the view that the cervix is often affected by inflammatory ulceration, and his opponents denying it. The import-

ance which he attached to the matter may be appreciated from the following quotation. In reviewing the state of uterine pathology in Great Britain, as illustrated by the standard work of Sir Charles Clarke, he says: "Various forms of cancerous ulceration are carefully described, but the very existence of inflammatory ulceration is not mentioned. Now, when we reflect that, as I shall hereafter show, in nearly five cases out of six of *confirmed* uterine disease, in which chronic discharges, mucous, puriform, or sanguinolent, or other well-marked uterine symptoms are present, there exists inflammation or inflammatory ulceration of the cervix, it is easy to conceive how erroneous must be the views respecting uterine pathology, of a medical school ignorant of so vitally important a circumstance."

The last edition of Dr. Bennet's work was published in 1861, and a quotation of the views held by him in 1870 shows that they were essentially unaltered. Yet I believe that I am correct in saying that the great majority of the progressive gynecologists of our time sustain the views which are opposed to his. I find myself to-day endorsing the action of Sir Charles Clarke in publishing a work on diseases of women "in which the very existence of inflammatory ulceration is not mentioned," or is mentioned only for the purpose of disputing its validity.

One great advance which was effected by the work of Dr. Bennet was the placing upon a surer basis than it had yet occupied, the differentiation of engorgement and induration from commencing cancer of the neck.

It would be well, before proceeding further, to consider very briefly the different pathological views which from this time, and even somewhat before it, were offered to the profession, and more or less generally adopted.

They may be thus enumerated:—

1st. That inflammation is the starting-point of most of the affections of the uterus, and that a large number of evils follow this morbid state as results.

2d. That uterine disorder is dependent upon a constitutional derangement, and would yield without other treatment than that directed to the removal of the general condition.

3d. The view of Dr. Bennet, which is similar to the first mentioned, with this additional point, that metritis generally limits itself to the neck, and only exceptionally affects the body.

4th. The view of Dr. Tyler Smith, that leucorrhœa arising from glandular inflammation in the cervix is the cause of granular derangement of this part, and of subsequent engorgement.

5th. The view that uterine disorders often, if not generally, commence in displacement, which is a primary and not a secondary condition, and that to relieve the train of morbid symptoms, this, its exciting cause, should be first removed.

6th. The view that uterine disorder is commonly the result of ovarian

inflammation, which reacting on the womb is the prime mover, in many cases, of its morbid states.

I have no intention of fully discussing here the merits of these theories, but will limit myself to a few words connected with each.

The theory mentioned first in this enumeration is the oldest on record, the writers of the Greek School, even, adopting it. Thus Paulus Ægineta heads his chapter on the subject, "Inflammation of the uterus and change of its position." One of the symptoms of such inflammation he considers to be retroversion of the uterus. In the beginning of the present century this was generally accepted in France. Lisfranc and Récamier adopted it, and it was transferred to, and advocated in, Great Britain by the writings of Dr. Bennet.

The views of this last author, appearing as they did at a time when the field of uterine pathology was almost entirely uncultivated, and characterized as they were by a great deal of persuasive force, produced in this country a marked impression. As to myself I am forced freely to confess that since the publication of the first edition of this work my opinions with regard to them have undergone a material alteration. This alteration has resulted not from theoretical reasoning, but from careful and candid investigation and experimentation at the bedside. I have come to regard the belief of Dr. Bennet in inflammation as the great moving cause, the common factor, in the production of uterine diseases, as an error. And as my views have thus altered with reference to pathology, they have, necessarily, likewise changed with reference to treatment. It appears to me that the time has arrived when many who formerly accepted the opinions of Dr. Bennet will be prepared to admit the fact that his treatment is too severe; his use of caustics too heroic; and his neglect of artificial support to the displaced uterus too decided. No one could have accepted his views more cordially than I did. They were seductive by reason of their simplicity, and plausible from their apparent rationality. Careful observation at the bedside, in as large a field as could be desired, has led me to feel that evil, rather than good, results from an adherence to them. Feeling this, I shall strive in the work which I am now undertaking so to modify my statements as to meet what I regard as the true requirements of the subject.

Let us however bear in mind, while venturing to criticize the views and practice of Dr. Bennet, that science is progressive, and that what was good a quarter of a century ago has simply given place to what is better. If, with all the lights of modern pathology, we stood now where Dr. Bennet stood when he wrote, the discredit would have been with us; it is not with him that we do not do so. However others may differ from him, no candid mind can deny the obligation under which he has placed his brethren by arousing their attention and directing their investigations into proper channels.

No one can devote himself to the practical study of uterine diseases without being impressed with the strong grounds which exist for the maintenance of the second of the theories mentioned. No grave uterine trouble affects the system for any length of time without reacting to a greater or less extent upon the general health. The nervous system becomes greatly disordered, the functions under its influence are badly performed, and derangement in hematosis is the invariable result. As the local disease often approaches stealthily, and may exist for a length of time without exciting suspicion, what is more natural than that many should view it as one of the numerous results of the general depreciation? These three facts, however, which will constantly repeat themselves, as often, I may say, as favorable cases offer for testing the question, will, I think, very generally lead to a distrust of the doctrine: 1st, the fact that uterine disease and constitutional derangement existing together, a cure can rarely be effected by general means *alone*; 2d, that the uterine affection being removed, the general state is at once improved; and 3d, that those general conditions which prostrate the vital forces to the last degree, as, for instance, tuberculosis, uræmia, scurvy, leucocythæmia, etc., destroy life without ever showing, unless as an exception to a rule, uterine disease as a consequence.

The constitutional depreciation of a woman will, however, sometimes prove a predisposing cause of local disease. As granular degeneration under the eyelids will arise from this cause, so will a kindred condition often occur on the cervix uteri, yet both will require local as well as general treatment. The enfeebled woman is more liable to subinvolution, passive congestion, and displacements, after delivery, than the strong; and inflammation of the glands of the cervix is a well-known result of phthisis pulmonalis, tertiary syphilis, and anæmia.

The theory of Dr. Tyler Smith¹ I lay before the reader in his own words: "It is my conviction, notwithstanding, that in the majority of cases in which morbid states of the os and cervix are present, cervical leucorrhœa, or, in other words, a morbidly augmented secretion from the mucous glands of the cervical canal, is the most essential part of the disorder, and that the diseased conditions of the lower segment of the uterus, which have been made so prominent, are often secondary affections resulting from the leucorrhœal malady." This theory was by no means a new one when advanced as above mentioned, for Lisfranc² mentions it thus: "Observation proves that leucorrhœa can in the first place cause uterine engorgements, and that later it may be kept up by them; it occasions them often."

Lisfranc, however, says "often," while Dr. Smith says, "in the majority of cases." But even before Lisfranc it had attracted attention, for

¹ On Leucorrhœa.

² Clin. Chirurg., vol. ii. p. 303.

Paulus Ægineta¹ gives "defluxion" as one of the causes of "ulceration of the womb." That an acrid leucorrhœal discharge will create abrasion of the os, follicular vaginitis, urethritis, pudendal inflammation, and pruritus, no one will deny. We see a similar irritation occurring on the upper lip in nasal catarrh in children, which sometimes spreads as an eruption over the whole face. The leucorrhœa regarded by Dr. Smith as the primary disease is, however, only a symptom of cervical endometritis, which may disorder nutrition in the deep tissues of the cervix, and result in enlargement and induration. The views of Dr. Smith were brought forth at a time when Dr. Bennet was pressing the theory of inflammation as the key-stone of uterine pathology, and in combating the idea of parenchymatous inflammation, he recorded the important fact that the morbid state described under that name is very often preceded by, and results from disease taking its rise in the mucous lining of the canal. Dr. Smith's position was maintained with all that ability and force which have rendered him so popular as an author amongst us in America, and the influence of his writings upon uterine pathology can be, at present, clearly traced in this country.

In the year 1854, a discussion, which soon assumed extensive proportions and elicited great warmth, arose in the Academy of Medicine of Paris, with reference to the treatment of uterine displacements. M. Velpeau stood forth as champion of the view which is here expressed in his own words. "I declare, nevertheless, that the majority of the women treated for other affections of the uterus have only displacements, and I affirm that, eighteen times out of twenty, patients suffering from disease of the womb, or of some other part of this region, those for instance in whom they diagnose inflammation (engorgements), are affected by displacements." In this and subsequent discussions he was upheld by some of the most eminent practitioners of Paris, and by many the view then expressed is still adhered to. No one of experience will question the fact that a disorder of position of the uterus will often result in subsequent disorder in nutrition and sensibility. Every one must have repeatedly met with cases in which the reposition and support of a displaced uterus have at once dissipated a collection of symptoms which by many would have been attributed to inflammation of the mucous lining or parenchyma. Every one must have found in many cases the relief of a displacement, which was regarded as only an unimportant concomitant of the morbid state, result in complete cure. But admitting this is merely admitting the propriety of regarding displacement as one of many untoward influences which may disorder the innervation, circulation, and nutrition of the uterus; not making it the chief factor in the production of uterine diseases.

The primary importance of displacement was long ably maintained in

¹ Op. cit., p. 624.

this country by the late Prof. Hugh L. Hodge, of Philadelphia, and the adherents of this theory are numerous.

The most signal instance of its adoption which has recently occurred is that of Dr. Graily Hewitt, of London. While he does not make displacement absolutely essential as a primary factor of uterine disease, and limits his belief in its agency almost entirely to flexions or deformities of shape, the importance which he attaches to such displacements may be gathered from the following quotations from the third edition of his valuable work upon the diseases of women.

"a. Patients suffering from symptoms of uterine inflammation (or, more properly, from symptoms referable to the uterus) are almost universally found to be affected with flexion or alterations in the shape of the uterus of easily recognized character, but varying in degree.

"b. The change in the form and shape of the uterus is frequently brought about in consequence of the tissues of the uterus being previously in a state of ~~urinary~~ ^{urinary} softness, or what may be often correctly designated as chronic inflammation.

"c. The flexion once produced is not only liable to perpetuate itself, so to speak, but continues to act incessantly as the cause of the chronic inflammation present."

In a certain number of cases very grave and annoying symptoms of uterine disease will be found due to chronic ovaritis, an affection in which treatment is so inefficient that every practitioner must dread to meet it. The symptoms of uterine disease being present, an exploration of the pelvic organs is made. No uterine disease of any kind is found to exist, but prolapsed into Douglas's cul-de-sac are found the ovaries, large, tender, and tumefied. In other cases uterine disease will be found coexistent with enlargement, tenderness, and displacement of ovaries, and the practitioner indulges the hope that so soon as the uterine disorder shall be cured the ovarian trouble will disappear. Such a sequence, however, does not occur, and he recognizes, to his disappointment, that what he regarded as a secondary matter is really one of primary importance. For this reason no examination of the pelvic viscera should be considered complete which does not involve a careful investigation of the state of the ovaries.

For many years a thorough sceptic as to the frequency of ovarian disorder as a cause of the ordinary symptoms of uterine disease, I am now convinced of its truth, and in few cases do I give more guarded prognoses than in those in which I find one or both ovaries enlarged, tender, and prolapsed.

Since the year 1850, when he published his well-known work upon the subject of Ovarian Inflammation, no one has been a more constant or consistent advocate of the claims of ovarian pathology upon the notice of the gynecologist than Dr. Tilt, of London. At a meeting of the London Obstetrical Society, in April, 1873, he recapitulated his views, and it

cannot fail to be a matter of interest to see how time and experience have affected them. The positions which he originally took were these: 1st. That the recognized frequency of inflammatory lesions in the ovaries and in the tissues that surround them is of much greater practical importance than is generally admitted. 2d. That of all inflammatory lesions of the ovary those involving destruction to the whole organ are very rare, whilst the most numerous, and, therefore, the most important, may be ascribed to a disease that may be called either chronic or subacute ovaritis. 3d. That, as a rule, pelvic diseases of women radiate from morbid ovulation. 4th. That morbid ovulation is a most frequent cause of ovaritis. 5th. That ovaritis frequently causes pelvic peritonitis. 6th. That blood is frequently poured out from the ovary and the oviducts into the peritoneum. 7th. That subacute ovaritis not unfrequently causes and prolongs metritis. 8th. That ovaritis generally leads to considerable and varied disturbance of menstruation. 9th. That some chronic ovarian tumors may be considered as aberrations from the normal structure of the Graafian cells.

Dr. Tilt pointed out that although these views, when promulgated, had been adversely criticized by Drs. Rigby, West, Bennet, and Churchill, they were now to a great extent accepted, and that they have been amply demonstrated both clinically and microscopically by Aran, Bernutz, Gallard, Négrier, and Siredey. I would emphatically dissent from his 3d postulate, which I regard as entirely too sweeping an assertion, but with the remaining eight I fully agree.

Of late years rapid advances have been made in the surgical treatment of the diseases of women. Under the lead of Simpson, Wells, Brown, and Keith, in Great Britain; of Simon, Esmarch, Ulrich, Hegar, Spiegelberg, and Schröder, in Germany; and of Sims, Atlee, Emmet, Peaslee, Dunlap, Agnew, and Kimball, in the United States; operations for ovariectomy, the cure of ruptured perineum, vesico-vaginal fistulæ, constriction, or tortuosity of the cervix, prolapsus uteri, laceration of the cervix, etc., have been perfected and are now constantly practised.

During the last quarter of a century three men have led the profession in the surgical portion of this department, and by their originality done a great deal to create what exists to-day; Sims in America, Baker Brown, in England, and Simon in Germany. Before their period anæsthesia was unknown and their predecessors lacked its aid. For them it offered its rare advantages, and they had the genius to make good use of them.

Both the science and art of gynecology have been greatly advanced by the pathological researches of the German school. To-day confessedly in advance of all other nations in the study of pathology, the laborious, conscientious, and persevering scholars of that country are altering and improving our views in reference to this subject, while contributions of great practical value are coming forth from them to enrich our literature. Among these may be especially mentioned those by Kiwisch, Hennig,

Waldeyer, Simon, Spiegelberg, Martin, Scanzoni, Klob, Schræder, Veit, and Schultze.

It is a great source of pleasure to me before closing this sketch to be able to record the fact that America has not been wanting in her contribution towards the progress of this branch of medicine. While the interests of gynecology were, during the early part of the present century, advanced in other lands by those whose names have been mentioned, in America they were pressed upon the attention of the profession and assiduously cultivated by three able advocates, all, singular to relate, from the same city,—Dewees, Meigs, and Hodge. Each of these observers brought to his work the most signal ability and enthusiasm, and, having abundant opportunities, as public teachers and writers, of disseminating their views, they each exerted a decided influence upon the mind of the profession. To the last of these gentlemen the profession throughout the world is more deeply indebted for means of properly sustaining the uterus by pessaries than to any one else who has ever labored in this field, and we see in our day his determined opposition to the phlogistic theory of uterine disorders rapidly gaining advocates amongst the ablest and most philosophical in our ranks.

From this country have emanated, as contributions to this important department of medicine, anæsthesia, ovariectomy, the revival of the method by which vaginal fistulæ have been made amenable to systematic treatment, and which since the time of Gossett had been entirely forgotten; and last, but by no means least, the introduction into ordinary practice of Sims's methods of exploring the pelvic viscera.

I have elsewhere called the results of the labors of Récamier and Simpson eras in the progress of this department. I now venture so to style those of Marion Sims. In doing this I make no reference to the improvements inaugurated by him in the treatment of injuries to the genital organs; my allusion is to the great advantages which now flow and are to flow from the invention of his speculum, which exposes the uterus by a new principle, and opens the way to a more complete examination of that organ. Récamier marked an era by improving our powers of diagnosis in exposing the cervix uteri; Simpson another, by opening to investigation the body of the uterus; and Sims a third, by rendering both investigations more simple, complete, and satisfactory.

There is no more certain way of appreciating the effect of light than by withdrawing it and marking the degree of darkness which results. If all that Sims has done for gynecology were suppressed, we should find that we had retrograded at least a quarter of a century.

The ordinary specula in use before the discovery of Sims's, simply separate the vaginal walls mechanically, and thus expose the uterus. Sims's instrument, on the other hand, elevates the posterior vaginal wall, which allows the entrance of air to distend the whole passage, the woman lying

on her side in such a manner that the cavity can be probed with the most perfect ease, and applications made to the fundus. I am fully aware that many will differ from me in this opinion, but being entirely free from prejudice in favor of this instrument, or against the ordinary varieties, I maintain it fearlessly, feeling confident that time will prove it to be correct. No one who has not tested the two methods of examination is really entitled to an opinion upon the point, and I cannot doubt the conclusion of him who has done so faithfully and intelligently.

It may very pertinently be asked how I reconcile this opinion with the facts that with the exception of Emmet in his recent work, and myself, no other writer of a systematic treatise on gynecology recommends this method of exploration in preference to that by the cylindrical speculum in daily practice; that few, if any, of the gynecologists of Great Britain or the continent of Europe employ it to the exclusion of the old plan in ordinary cases; and that even in this city, where the personal advocacy of Sims himself and the wide-spread influence of the Woman's Hospital which he has founded are felt, only a score of practitioners do so, most of whom are connected with this hospital. My explanation of the facts is this: to employ Sims's speculum efficiently considerable experience with it is necessary. One who has not practised with it so as to become skilful will find it far less useful than the cylindrical and valvular specula in ordinary use. I feel sure that most of those who have tried it and cast it aside, except for operations on the vagina or uterus, have attributed their own shortcomings to an instrument the use of which they had not mastered. Again, it is necessary to have an assistant, and highly desirable to have a practised assistant, to hold the speculum. None of the substitutes for such an assistant have ever proved or, I think, will ever prove effectual. For this reason also the use of this instrument has not become more general.

It is becoming customary, with those who practise gynecology as specialists in this city and employ this speculum, to see their patients almost universally at their offices, and to have in attendance a trained nurse who manages both patient and instrument during examinations. One practising in this manner places himself, I am confident, on a vantage ground, which can scarcely be imagined by him who clings to the old methods of exploration. The experience required, however, to use this speculum with advantage, and the disadvantage of its requiring the aid of a nurse, will prevent its universal or even very general adoption. I do not believe that the practitioner who sees very little of uterine disease will ever employ it. But there are at present many who are studying and practising gynecology extensively and scientifically. It is to such that these remarks are especially addressed.

In stating all this thus plainly and positively, I am by no means ignorant of the criticism to which I expose myself from an overwhelming and

most influential majority. I confess that even to the slow advance made by Sims's speculum, *as an instrument for every-day use*, has been a matter of great surprise. Familiarized, however, by years of practice with both methods of examination, and prejudiced in favor of neither, I cannot doubt the result. The assertion of its rights by the new method will give an impetus to the advance of gynecology which in some degree it has even now effected.

I cannot close this part of my subject without appealing to those working in this department who are willing to test the matter, in the following manner. Learn the use of Sims's speculum, not by personal labor and experiment, but from one who is fully master of it; have at your disposal a trained nurse, and persevere with the method for three months, and you will endorse the statement as to the vantage ground which you will occupy, which just now appears so exaggerated to you. Nothing is easier than to attack *upon paper* such a position as that which I have here assumed; nothing more tempting than a half humorous, half sarcastic review of it. But the question is one of too great moment to be thus dealt with. All earnest workers in our ranks are in search after truth, not striving to prove themselves right; all wise men are eager to avail themselves of improvements in their calling, not to find warrant for hugging what is old.

Although the scope of this chapter will not admit of the mention of all the works which have recently appeared upon this subject, I cannot refrain from mentioning one which comes to us offering, among other valuable contributions, one of the most important pathological facts, and with it its corresponding surgical resource, which the last half century has yielded. The work is the highly original and valuable one of Dr. Thomas Addis Emmet, of New York; the pathological contribution which, even if this eminent author had done nothing else to lay his profession under obligation, would indelibly write his name upon the records of gynecology, is the diagnosis and treatment of laceration of the cervix uteri. No one contribution to this department which has been made in the period mentioned has exerted a more marked influence upon uterine pathology than this is now doing, and will do in the future. None will have more influence in abolishing useless and hurtful therapeutical resources.

During the past thirty years a decided effort has been made all over the civilized world to introduce into medicine a remarkable innovation—the opening of its doors to the entrance of women as practitioners. The prevalent and very just sentiment, that the gentle and sympathetic nature of woman would, in this department of labor, find an appropriate field of action, at that period began to be clearly expressed, and the urgent demand which was made by progressive minds in different countries has at the present day been fully met. This has not been accomplished without opposition. The usual adverse striving of narrow and non-progressive minds has not been wanting to retard the advance of the movement, but

in spite of this, with an almost unprecedented rapidity when its magnitude is considered, it has arrived at assured success.

The connection of woman with the practice of medicine is a matter of no recent date. The sentiment which fosters it now has existed in an undeveloped state from the earliest ages. Aëtius makes mention of the writings and practice of Aspasia, who was a doctress at Rome about the third century, and copies extensively from her upon ulceration and displacements of the womb. Paulus Ægineta is, for some of his chapters, indebted to Cleopatra, fragments of whose writings he has preserved for us. He evidently quotes her with respect, and credits her with what he borrows. In the thirteenth century an Arabian woman, Trotula by name, published a treatise, in which she mentions that many Saracenic women practised the art of obstetrics at Salerno. In later times, during the seventeenth and eighteenth centuries, women were graduated as Doctors of Medicine in the Italian Universities, and as such enjoyed great consideration. In 1732, La Dottoressa Laura Bassi graduated at Bologna, and filled the chair of Natural Philosophy for six years. In the last part of the eighteenth century, Madonna Mazzonlina lectured on anatomy at Bologna, while others of lesser note filled positions of minor importance. To the women of Arabian civilization the department of obstetrics was entirely surrendered; for so great were the sensuality and libertinism of the Saracens, that the Mahomedan laws prohibited the attendance of males upon females; and thus their whole treatment, except in extreme cases, devolved upon the midwives.

In France a portion of the work of medicine has long been allotted to "Sages Femmes" or midwives, and the names of Mmes. La Chapelle and Boivin, who lived in the last part of the eighteenth and the beginning of the nineteenth centuries, come to us clothed with great authority.

The demand of our time then is not that woman may practise medicine, but that she should have every opportunity which that time offers her to prepare herself for the work. Many have doubted, and upon excellent grounds, the ability of woman to cope with man in this field of labor, for there is no resisting the evidences of history, that, in spite of opportunities and incentives, female practitioners have failed in time past, not only to advance, but even to maintain the integrity of the art intrusted to their hands. The experience of the future may contradict that of the past; but even its doing so will offer no good reason for despising the lesson which the past has left on record. As futile would it be, however, to resist the overwhelming "logic of events," and to shut our eyes to the fact that the "woman movement" has conquered for itself in medicine a position which entitles it to consideration and respect.

The opportunity which is now offered to woman for retrieving what has been lost in former ages is certainly all that the most exacting of modern reformers could require. The prejudice which for years existed against

her in this connection appears to be, in this country and in Europe, almost entirely eradicated. In many of the most ancient and eminent of the universities of Europe they are free to matriculate, and in most of the largest cities both of Europe and America female medical colleges exist. In this city, some of the most able of our junior teachers are engaged in instruction in the Female Medical College, and many of the most eminent and conservative of the senior members of the medical profession have accepted positions as consultants to the hospital attached to the college. Female practitioners are freely met in consultation in general practice, and the County Medical Society, one of the two representative associations of the city, admits them to its ranks as members. The general and sincere feeling of the progressive and most prominent members of the medical profession here is unquestionably this, to allow to females a fair opportunity to enter the field of medicine, and strive to establish their ability to perform its arduous functions, however much they may doubt the success of the enterprise. All appear willing to intrust the solution of the problem of woman's fitness for the duties of medicine to time, the great crucible of human theories.

"The burning question," says J. R. Chadwick, in an excellent review of this subject, "is no longer, shall women be allowed to *practise* medicine? They *are* practising it; not by ones or twos, but by hundreds; and the only problem now is, shall we give them opportunities for studying medicine before they avail themselves of the already acquired right of practising it?" Admitting that this question is justly put, can any one wishing well to humanity and to science venture to array himself on the negative side?

An innovation in general surgery which bids fair to be one of the greatest improvements which has ever been effected in that art has been reserved for our time—the establishment upon a systematic basis of antiseptic surgery. No departments of surgery will feel, indeed are now feeling, the influence of this more decidedly than those of gynecology and obstetrics. The great evil from which they have suffered is septicæmia, and this it is the special object of Listerism to prevent and overcome. Not only does this method offer great advantages in ovariectomy, in all its details except the use of the spray it may with the greatest advantage be applied to all operations within the pelvis.

I am so often consulted by recent graduates as to the works which they should make the basis of a library upon gynecology, that I feel that I may render a service by the following list. Only such works are recorded as will prove of absolute service to the active practitioner who seeks knowledge chiefly upon practical points :— *

Nonat—*Maladies de l'Utérus*, 1 vol.

Aran—*Maladies de l'Utérus*, 1 vol.

Becquerel—*Maladies de l'Utérus*, 2 vols.

- Blatin et Nivet—*Maladies des Femmes*, 1 vol.
 West—*Diseases of Women*, 1 vol.
 Tilt—*Uterine and Ovarian Inflammation*, 1 vol.
 Bennet—*On the Uterus*, 1 vol.
 Simpson—*Diseases of Women*, 1 vol.
 Hewitt—*Diseases of Women*, 1 vol.
 Churchill—*Diseases of Women*, 1 vol.
 Byford—*Medical and Surgical Treatment of Women*, 1 vol.
 Sims—*Uterine Surgery*, 1 vol.
 Baker Brown—*Surgical Diseases of Women*, 1 vol.
 Tilt—*Uterine Therapeutics*, 1 vol.
 Scanzoni—*Diseases of Females*, 1 vol.
 Meigs—*Diseases Peculiar to Females*, 1 vol.
 Bedford—*Diseases of Women and Children*, 1 vol.
 Colombat—*On Females* (annotated by Meigs), 1 vol.
 Ashwell—*Diseases of Women*, 1 vol.
 McClintock—*Diseases of Women*, 1 vol.
 Courty—*Maladies de l'Utérus et de ses Annexes*, 1 vol.
 Hodge—*Diseases Peculiar to Women*, 1 vol.
 Klob—*Pathological Anatomy of the Female Genital Organs*, 1 vol.
 Spencer Wells—*On Diseases of the Ovaries*.
 Kiwisch—*On Diseases of the Ovaries*, 1 vol.
 Wright—*Diseases of Women*, 1 vol.
 Emmet—*On Vesico-Vaginal Fistulæ*, 1 vol.
 Duncan—*Parametritis and Perimetritis*, 1 vol.
 Duncan—*Fecundity, Fertility, and Sterility*, 1 vol.
 Athill—*Diseases of Women*, 1 vol.
 Gallard—*Lçons Clinique sur les Maladies des Femmes*, 1 vol.
 Peaslee—*Ovarian Tumors*, 1 vol.
 Atlee—*Ovarian Tumors*, 1 vol.
 Barnes—*Treatise on Diseases of Women*.
 Goodell—*Clinical Lectures on Diseases of Women*, 1 vol.
 Leblond—*Traité Elementaire de Chirurgie Gynecologique*, 1 vol.
 Schröder—*Diseases of Female Sexual Organs*, 1 vol.
 Tait—*Diseases of Women*, 1 vol.
 Emmet—*Principles and Practice of Gynecology*, 1 vol.
 Hegar and Kalténbach—*Die Operative Gynäkologie*, 1 vol.
 Skene—*Diseases of the Bladder and Urethra in Women*, 1 vol.
 Mary Putnam Jacobi—*The Question of Rest for Women*.
 Martineau—*Traité Clin. des Affec. de l'Utérus*.

The following journals are now devoted to this subject:—

- Centralblatt für Gynecologie.
 Annales de Gynecologie.
 Obstetrical Journal of Great Britain and Ireland.
 American Journal of Obstetrics and Diseases of Women and Children.
 Obstetric Gazette.
 Archiv für Gynäkologie.

CHAPTER II.

THE ETIOLOGY OF THE DISEASES PECULIAR TO WOMEN.

IN investigating the causes of the diseases peculiar to women I shall especially refer to those which are active in this country. In doing this I desire to avoid all comparison between the frequency of such affections here and abroad, for in the absence of statistical evidence such an attempt would necessarily prove futile. My chief reason for giving myself the limits herein prescribed is my desire to base the views advanced in this chapter entirely upon personal observation, to offer to the reader not the conventional doctrines prevalent upon the subject of which it treats, but those views which have impressed themselves upon my own mind as valid and valuable. With this object in view, it is manifestly easier to write of habits and influences which come under one's daily observation and connect themselves with the experience of his daily life.

I shall divide the causes to which I shall draw attention into predisposing and exciting, premising their enumeration by the announcement that I do not propose to mention all of the former which are active, but to limit myself to those which are most prominent, and which are to a great degree avoidable. Others, such, for example, as inherited constitutional vices, will be spoken of in connection with special diseases as they come under notice. Considering very fully the predisposing causes, I shall give merely an enumeration of the chief exciting ones, leaving the fuller consideration of the latter also for chapters devoted to special affections.

If we compare the present state of women in refined society over the world with that of the working peasants of the same latitudes, or with the North American squaws, or the powerful negresses of the Southern States, we can with difficulty believe that they all sprung from the same parent stem, and originally possessed the same physical capacities. Observation proves that women who are not exposed to depreciating influences can compete in strength and endurance with the men of their races, and in savage countries they are sometimes regarded as superior to them. In the lower orders of animals this equality is still more marked. The mare endures as much as the horse, and some of our most celebrated racers have represented the female sex. The lioness is fully as dangerous to the hunter as her more majestic consort, and the bitch proves as untiring in the chase as the most muscular dog in the pack.

From all these facts we may logically argue, that the human female, if

properly developed and placed, beyond causes which militate against her physical well-being, would be in no great degree the inferior of the male. This position I now assume, and maintain that the customs of civilized life have depreciated her powers of endurance and capacity for resisting disease. My efforts will be directed to an endeavor to point out what these habits and influences are. I do not, of course, advance the statement that uterine diseases are unknown among uncivilized women, for I have too often seen prolapsus, retroversion, granular degeneration, and kindred disorders among the former slaves of this country to do so. These affections were, however, rare among them, and not *exceedingly common*, as they are amongst our white women, and even when they existed, they did not so profoundly affect the constitutions of those suffering from them. As I shall hereafter point out, injuries inflicted by parturition play a most important role in the causation of these disorders. To such injuries as laceration of the perineum and cervix, disorders of involution, etc., the savage woman is unquestionably liable, and their occurrence would entail upon her the same evils which would result from them in the civilized. Yet how much less liable to their occurrence is the strong, well-developed, muscular frame of the former than the delicate sensitive organization of the latter! And even if exposed to the baneful influence of these accidents, how much more able is she to resist their depreciating influences! There are in this city to-day thousands of poor women who go through with the labors of their lives of drudgery with the uterus, vagina, and portions of the bladder and rectum in the condition of complete prolapse, the first two organs entirely, and the last two in great degree, outside of their bodies. How differently would the refined woman of a higher sphere be affected by a similar condition, and how utterly wretched would her life ordinarily be rendered!

In a woman of robust frame, healthy nervous system, and perfect blood state, who lives a rational and carefully regulated life, an accident, occurring at parturition, during menstruation, or at any time disconnected with these trying periods, may produce serious disease. But in such a woman accidents are much less likely to occur, and even if they did so would produce much less serious consequences than in one in whom the predisposing causes of disease of the genital system had for a lifetime, and even longer, for hereditary influences are powerful for evil in this connection, prepared the way for the easy establishment of pathological conditions.

Those influences which, growing out of the physically depreciating habits of civilized life, tend most decidedly to develop a predisposition to diseases of the female genitalia may thus be enumerated:—

Neglect of out-door exercise and physical development.

Overwork of brain, and excessive development of nervous system.

Improprieties of dress.

Imprudence during menstruation.

Imprudence after parturition.*

Non-recognition or neglect, on the part of the obstetrician, of injuries due to parturition.

Prevention of conception and induction of abortion.

Marriage with existing disease of genitalia.

• Insufficient food.

Habitual constipation.

Neglect of Exercise and Physical Development.—There can be no doubt of the fact that, as a general rule, in the higher walks of life throughout the civilized world, the female, from infancy to old age, takes much less exercise than the male, and in the United States, owing to peculiarities of climate, this disproportion is probably more marked than in the countries of Europe. It is true that the last decade has seen a most gratifying improvement in this respect, and that the practice of out-door amusements, such as rowing, bowling, archery, walking, croquet, horseback exercise, etc., has become much more general.

This, however, is greatly confined to the inhabitants of cities and to very young women, and even among these it must become much more general than it is to-day for it to produce the results which may in time be expected from it. The female by nature is as a rule much more inclined to a sedentary life than the male, and as her occupations keep her indoors she is apt, whether living in city or country, to lose all taste for out-door amusements, and to confine herself to the close, heated air of inhabited apartments. Among our farming population, where all the out-door work is done by the males, the women commonly take less exercise in the open air than do those in our cities, and much of their time is spent in rooms heated by stoves which cook the air and render it dry and unwholesome.

In spite of the improvement we have mentioned, in our cities will, to-day, be found hundreds of ladies who do not walk a mile a day for weeks together, and many more who have never engaged in any exercise which called forth the action of other muscles than those employed in the quietest locomotion.

But nowhere is the neglect of early physical development more marked than in our boarding-schools and female seminaries, where every hour of the day from six in the morning to nine at night is allotted by rule to some special task. Instead of the girls being encouraged to engage in out-door pursuits calculated to create muscular power, they are reared in the belief that such pastimes are hoydenish, unbecoming, and fit only for rough boys. Their hours of leisure are occupied by reading, music, drawing, or some similar light task, and an hour's walk every day is regarded as a degree of exercise quite sufficient for the requirements of health. By this plan the mind is constantly kept in the thralldom of control, and chafes under the depressing influence of a never-ending surveillance. A set of

romping school-girls could as profitably laugh by rule as really enjoy and improve by exercise under the eye of an instructress or professor of calisthenics. It is not the mere bodily exertion which is of benefit, but the total mental relaxation, the exhilaration and the abandon which accompany it. The prisoner working for eight hours on the treadmill does not profit by it as the free and happy equestrian or oarsman does by one-eighth the time of exercise.

One of the most important results of exercise is the increase of the peripheral circulation. This increases cutaneous exhalation, and tends to equalize the circulation. The woman who neglects it is peculiarly prone to excessive uterine and ovarian congestion at menstrual epochs, and to sluggish circulation in these parts at all times. It is this fact which explains the excellent results attainable in cases of uterine and ovarian disease from the use of passive motion by the Swedish movement cure, the Turkish bath, surf bathing, and other methods which create turgescence of the cutaneous capillaries, and exalt metamorphosis of tissue in the periphery of the body. One of the most valuable and beneficent means of treating these diseases that I know of is the use night and morning of a warm sponge-bath of water strongly impregnated with salt, followed by thorough friction with a rough towel and calisthenic exercises for five or ten minutes.

Excessive Development of the Nervous System.—The necessity for a due proportion existing between the development and strength of the nervous and muscular systems has always been recognized, and has given rise to the trite formula, “mens sana in corpore sano,” as essential to health. Unfortunately the restless, energetic, and ambitious spirit which actuates the people of the United States, has prompted a plan of education which by its severity creates a vast disproportion between these two systems, and its effects are more especially exerted upon the female sex, in which the tendency to such loss of balance is much more marked than in the male. Girls of tender age are required to apply their minds too constantly, to master studies which are too difficult, and to tax their intellects by efforts of thought and memory which are too prolonged and laborious. The results are, rapid development of brain and nervous system, precocious talent, refined and cultivated taste, and a fascinating vivacity on the one hand; a morbid impressibility, great feebleness of muscular system, and marked tendency to disease in the generative organs, on the other.

That this statement of the advantages which are gained and the price which is paid for them is perfectly true, no American practitioner will deny. But the mere existence of the fact is not the most melancholy feature of the case; it is far more painful to see mothers listening to it, admitting its truth, and yet calmly and dispassionately choosing to make the trial, as we see them doing constantly.

When the day arrives in which our young growing girls are educated physically with the assiduity and system now bestowed upon their mental culture; when mothers desire to see their daughters grow up strong, well developed, muscular women, and not merely highly educated and accomplished valetudinarians, one of the most prolific of the predisposing causes of disease of the genital organs will have disappeared. No amount of mental labor, no degree of mental culture will fit a woman for the physical duties of wife and mother, or render her capable of bearing children competent to resist the inroads of disease.

In a woman developed by this pernicious system, the physiological congestion of the pelvic organs attending ovulation produces pain which is known as "neuralgic dysmenorrhœa;" ovulation becomes irregular and abnormal, favoring the development of subacute ovaritis; the normal hypertrophy of the uterus consequent upon utero-gestation slowly and imperfectly passes off, subinvolution often remaining; while the enfeebled muscular supports of the heavy organ allow it to lapse from its position and assume that of flexion or version.

Improprieties of Dress.—The dress adopted by the women of our times may be very graceful and becoming, it may possess the great advantages of developing the beauties of the figure and concealing its defects, but it certainly is conducive to the development of uterine diseases, and proves not merely a predisposing, but an exciting cause of them. For the proper performance of the function of respiration, an entire freedom of action should be given to the chest, and more especially is this needed at the base of the thorax, opposite the attachment of the important respiratory muscle, the diaphragm. The habit of contracting the body at the waist by tight clothing confines this part as if by splints; indeed it accomplishes just what the surgeon does who bandages the chest for a fractured rib, with the intent of limiting thoracic, and substituting abdominal respiration.

As the diaphragm, thus fettered, contracts, all lateral expansion being prevented, it presses the intestines upon the movable uterus, and forces this organ down upon the floor of the pelvis, or lays it across it. In addition to the force thus exerted, a number of pounds, say from five to ten, are bound around the contracted waist, and held up by the hips and the abdominal walls, which are rendered protuberant by the compression alluded to. The uterus is exposed to this downward pressure for fourteen hours out of every twenty-four; at stated intervals being still further pressed upon by a distended stomach.

In estimating the effects of direct pressure upon the position of the uterus, its extreme mobility must be constantly borne in mind. No more striking evidence of this can be cited than the fact, that in examining it by Sims's speculum, if the clothing be not loosened around the waist, the

cervix is thrown so far back into the hollow of the sacrum as to make its engagement in the field of the instrument often very difficult, and that attention to this point in the arrangement of the patient will at once remove the difficulty. While the uterus is exposed by the speculum, it will be found to ascend with every expiratory effort, and descend with every inspiration; and so distinct and constant are the rapid alterations of position thus induced, that in operations in the vaginal canal the surgeon can tell with great certainty how respiration is being affected by the anæsthetic employed. An organ so easily and decidedly influenced as to position by such slight causes must necessarily be affected by a constriction which, in autopsy, will sometimes be found to have left the impress of the ribs upon the liver, producing depressions corresponding to them.

Corseting, lacing, and the wearing of tight and heavy clothing, also produce a deleterious effect in quite another way. Pressure against the abdominal and thoracic muscles, and over the diaphragm, produces in them a partial paresis. This impairs abdominal as well as thoracic respiration, to a great extent counteracts the important retentive power of the abdomen over the pelvic viscera, and allows the influence of gravitation, which before was by that means antagonized, to cause displacement. This result of a pernicious habit cannot be too thoroughly appreciated or too much insisted upon. So prominent is it in etiology that I might well have considered it under the head of exciting causes. By the direct influences of pressure just considered, and the paresis of thoracic, abdominal, and diaphragmatic muscular fibres now alluded to, the abdominal viscera press upon the growing uterus of the young girl, and the fundus being bent towards the cervix, one uterine wall develops much more rapidly than the other, and at puberty the menstrual effort finds itself interfered with by closure of the cervical canal, and an origin for uterine disease is created thereby.

To a woman who has systematically displaced her uterus by years of imprudence, the act of sexual intercourse, which, in one whose organs maintain a normal position, is a physiological process devoid of pathological results, becomes an absolute and positive source of disease. The axis of the uterus is not identical with that of the vagina. While the latter has an axis coincident with that of the inferior strait, the former has one similar to that of the superior. This arrangement provides for the passage of the male organ below the cervix into the posterior cul-de-sac, the cervix thus escaping injury. But let the uterus be forced down, as it is by the prevailing styles of fashionable dress, even to the distance of one inch, and the natural relation of the parts is altered. The cervix is directly injured, and thus a physiological process is insensibly merged into one productive of pathological results. How often do we see uterine disease occur just after matrimony, even where no excesses have been committed. It is not an excessive indulgence in coition which so often produces this

result, but the indulgence to any degree on the part of a woman who has distorted the natural relations of the genital organs.

But this is by no means the only method by which displacement of the uterus may induce disease of its structures. It disorders the circulation in the displaced organ, and produces passive congestion and its resulting hypertrophy, prevents the free escape of menstrual blood by pressing the os against the vagina, creates flexion, causes friction of the cervix against the floor of the pelvis, and stretches the uterine ligaments and destroys their power and efficiency.

These facts should be carefully borne in mind by the physician who attempts to relieve uterine displacements by the use of pessaries. If he merely replaces the displaced organ and relies for its support upon a pessary, he will often fail in accomplishing the desired result. He is striving at great disadvantage with a short lever power against the weight, not of the uterus alone, but of the super-imposed viscera pressed downwards by several pounds of clothing, which add their weight at the same time that they constrict the waist and substitute abdominal for thoracic respiration. Thus employed the pessary will often give great pain, and so injure the parts upon which it rests as to necessitate removal, and the practitioner will find himself cut off from one of his most valuable resources. Should he, on the other hand, before employing a pessary, remove all constriction and weight from the abdominal walls, apply a well-fitting abdominal supporter over the hypogastrium so as to aid the exhausted abdominal muscles in their work, keep the displaced and congested uterus out of the cavity of the pelvis by a tampon of medicated cotton, or bring gravitation to his assistance by the position of the patient, he will ordinarily at the end of a week be able to employ with great advantage the same pessary, which at first seemed to accomplish evil and not good.

Imprudence during Menstruation is a prolific source of disease. Some women, through ignorance, many through recklessness, and a few from necessity, go out lightly clad in the most inclement weather during this period, and many suffer in consequence from violent congestive dysmenorrhœa, and often from endometritis. Every practitioner will meet with a certain number of cases of uterine disease which have this origin, and run on for years, ending, perhaps, in parenchymatous disease, which may prove incurable.

During a period in which the ovaries and uterus are intensely engorged, in which the surface of the ovary is broken through by the escaping ovule, and the nervous system is in an unusual state of excitability, ordinary prudence would suggest that the body should be well covered, that the congested organs should be left at rest, and that exposure to cold and moisture should be sedulously avoided. I need not say that these rules are commonly neglected; and in evidence of the fact I will venture the

assertion that, on this very day, the thermometer 15° above zero, the skating pond of our park contains scores of delicate and refined women who are showing a disregard of them by their presence there.

The immediate result of exposure during menstruation is most commonly inflammation of the mucous membrane of the uterus. Such an inflammation once excited will often go on for years and in time end in parenchymatous disease, entailing in its progress dysmenorrhœa, sterility, pelvic pain, and gastric disorders, which impair digestion and nutrition. Many cases, too, of pelvic peritonitis, cellulitis, and hematocœle develop at this trying period of congestion and nervous exaltation.

Imprudence after Parturition.—No sooner does fixation of the impregnated ovum upon the uterine surface occur than a surprising stimulation is exerted upon the fibre-cells forming part of the uterine parenchyma, which grow with rapidity, enlarging the organ, *pari passu*, with the requirements of its increasing contents. After the expulsion of the embryo, either at full time or at any period of pregnancy, the fibres thus developed undergo a fatty degeneration and absorption, which has received the name of involution. This process occurs rapidly after abortion, but after labor at term it requires six weeks for its full accomplishment. In order that it may proceed with normal rapidity and certainty, perfect rest is essential; and the woman who rises too soon, and resumes her usual occupations, while the lochial discharge is still existing, risks the results of interference with it. Besides this, the uterus is much heavier than usual, and the additional danger of the induction of displacement is incurred by too early exertion. Lastly, the mucous membrane lining the cavity of the uterus is for some time after parturition in an abnormal state, and is peculiarly liable to disease from exposure to cold and moisture. A very valid objection may be made to this view, that in the lower walks of life women rise after labor, and attend to their duties with impunity on about the ninth day, and yet enjoy a marked immunity from uterine affections. This is true; but let it be remembered that they are unaffected by the influences to which I have alluded as calculated to enfeeble and deteriorate their generative systems.

Another influence connected with parturition, which develops itself much more decidedly among the higher than the lower classes, is the pernicious habit of tight bandaging. For three or four weeks after delivery, the nurse commonly applies two folded towels over the enlarged uterus, and by powerful compression by a bandage forces the organ backwards into the hollow of the sacrum. This is supposed to preserve the comeliness of the figure, and the reputation of many a nurse rests mainly upon the thoroughness with which she develops an influence that is fruitful of evil in displacing an enlarged uterus in a woman who for a fortnight at least lies chiefly upon her back. That a well-fitting bandage, only tight enough

to give support, applied after delivery, proves a source of comfort to the woman, I am not disposed to deny. In this way I always employ one. But I feel very sure that a great deal of superstition attaches in the lying-in room to this appliance, both as a means of preventing deterioration of the figure, and post-partum hemorrhage. Uterine contraction should be secured by vital, not mechanical means, and no amount of compression by a bandage will cause the over-distended abdominal muscles, skin, fasciæ, and areolar tissue to return to their original condition. Not only should tight bandaging be avoided after delivery, the position should be systematically changed at intervals from the dorsal to the lateral decubitus. I am convinced that uterine displacement is one of the most fruitful causes of subinvolution. As, during the six weeks or two months succeeding delivery, the process of retrograde metamorphosis, called involution, progresses, the uterus, under untoward influences, many of which are developed by the routine management of the lying-in chamber, becomes displaced. This results in impeded venous return from its tissues; the process of involution is checked; and months or years afterwards the patient, being forced to apply to a physician, is informed that she has suffered and is suffering from metritis of a chronic character of which displacement is a complication or result.

Every practitioner frequently hears that some lady has been injured for life "because she was not properly bandaged at her last confinement," and either doctor or nurse, possibly both, are severely censured for the culpable neglect. Too often such censure is listened to in silence, and the party supposing herself injured is allowed to hold the same opinion still. It is the duty of every physician to inform those coming under his influence as to the futility of trusting to the obstetric bandage, or, if he cannot conscientiously do so, to review his opinion upon the subject, and see whether his own confidence is not misplaced.

Non-recognition or Neglect of Injuries due to Parturition.—When it shall become the duty of the obstetrician, as it surely soon will do under the influence of advancing knowledge, before relinquishing the care of the recently delivered woman, to inform himself thoroughly as to the existence of laceration of the cervix or perineum; when the false and vicious doctrine of undervaluing and ignoring these grave accidents is silenced forever; and when a neglect of their early repair by surgical resort shall be regarded as a flagrant obstetrical dereliction; then the number of women affected by pelvic disorders will become suddenly and wonderfully diminished. The time for this is now at hand, and the profession everywhere should raise its voice in a matter of preventive medicine as important as that relating to the infectious diseases.

So, too, is the time at hand for the complete obliteration of a prevalent idea in the public mind, that the functions of the obstetrician ordinarily

consist in watching by the parturient couch, receiving the coming child, and creating harmony and good feeling by well-turned compliments and blandness of manner. This popular idea has caused and causes now many a tender husband, who, were he about to select a coachman, would carefully inquire as to his capacity for an important trust, to confide his wife at the most delicate period of her existence to the hands of one notoriously incompetent. These are the practitioners who, day after day, year after year, send forth women with lacerated cervixes, and ununited perineums, to furnish to the gynecologist in the future cases of uterine engorgement, leucorrhœa, prolapsus, and other displacements, and cystitis, and a long list of pathological states which will cling to them for life, sapping their usefulness, and destroying the happiness of their households.

Prevention of Conception and Induction of Abortion.—Means established for the accomplishment of the first of these ends are often productive of uterine disorder. This will not be wondered at when the harshness of some of them is borne in mind. The workings of nature in this, as in all other physiological processes, are too perfect, too accurately and delicately adjusted, not to be interfered with materially by the clumsy and inappropriate measures adopted to frustrate them. The practice is becoming exceedingly common, as every physician is aware, so common, indeed, that in the older portions of this country, unfortunately, it must be said, in the more civilized and educated, it is by no means usual to meet with large families of children.¹

• The fact is not an agreeable one to deal with, and the facts which I am citing may prove unacceptable to many of my countrymen, but it is one which is rapidly assuming proportions which must influence the future population of our country. It is useless to ignore it. If an evil is to be eradicated, the first step towards such a consummation is its recognition, and what class of men can more immediately and more effectually grapple with this one than physicians?

With these statements we leave this unattractive subject to deal with another, which, from its importance, cannot conscientiously be passed over in silence. Statistics showing the frequency of criminal abortion never have been, and never will be written, for the crime creeps stealthily, beneath the scrutiny of society. That this criminal practice constitutes a prolific source of uterine disease no one engaged in gynecology can for a moment doubt. So impressed with this fact are the physicians of the United States that some years ago, at its meeting in New York, the

¹ Able papers upon this subject appear in the Boston Gynecological Journal from the pen of Prof. D. Humphrey Storer, and in the Phila. Medical Times from that of Prof. Wm. Goodell.

American Medical Association offered a prize¹ for a "short and comprehensive tract for circulation among females, for the purpose of enlightening them upon the criminality and physical evils of forced abortions."

Marriage with Existing Uterine Disease.—It is a common practice with physicians to recommend marriage as a cure for uterine disease. There are a sufficient number of abnormal conditions which childbearing cures to make the practice appear legitimate, but a vast deal of harm frequently results from it. A constricted cervix which causes dysmenorrhœa, a pure endometritis of neck or body, or an inactive state of the ovaries which results in amenorrhœa, may be relieved by the parturient act; but displacement, peri-uterine cellulitis or pelvic peritonitis, will very often produce evil results after labor, and very generally return with renewed violence as soon as involution has been accomplished. The advice is too often given empirically, and, like all such counsel, is hazardous in its results. My experience leads me to fear a return of such conditions after childbearing, even in a patient whom I considered cured at the time of marriage.

Insufficient Food.—Many diseases of the uterus are established, and a still larger number perpetuated, by impoverished blood and the disordered nerve state dependent upon spanæmia. So well known is this fact that a generous diet commonly constitutes an important element of treatment, and its result in improved hematosis is hailed as the harbinger of approaching improvement. The tone of the uterus, that is its muscular strength and power of resistance, is decidedly affected by want of sufficient nutrient material, and flexions are a frequent consequence, as Dr. Graily Hewitt has ably pointed out; engorgement of the mucous membranes of the uterus, Fallopian tubes, and vagina, are favored by the same influence; and it is beyond doubt that a feeble, atonic state of the uterine ligaments is engendered and kept up by it. To no nation in the world is a full supply of the most nutritious food so attainable as to the inhabitants of the United States. And yet it is no exaggeration to maintain that the American woman, except in our cities, is at least half starved. She suffers not from an enforced but a voluntary starvation, which however none the less impoverishes her blood and impairs her nerve power. Let any one travel through our farming regions and examine closely the women with whom he meets, and he must admit that the robust, buxom, florid lass and matron is the exception; the pale, lank, and emaciated, the rule.

¹ The prize thus offered was awarded to Prof. H. R. Storer, of Boston, for an able essay, entitled "Why Not?"

These women are not overworked, for this country knows no hard-worked peasantry. They are under-fed, however, from their cradles to their graves. It must be remembered that it is not merely material introduced into the stomach which nourishes the body, but the introduction of material capable of making blood of good quality which does so. The eating of salt fish and meats in place of fresh, the drinking of large amounts of tea in place of milk and malt liquors, and the consumption of incalculable amounts of the noxious and inevitable pie of the Eastern States in place of bread and nutritious puddings, will never answer the requirements of nutrition until the laws which govern that process are altered.

The American travelling in Great Britain is always struck by the large amounts of nutritious food, of malt liquors, and of the products of the dairy which are consumed as well as by the amount of time given to their consumption, and very often he plumes himself upon the more elegant habits of his own country. In vain do we look among our women for justification for such self-congratulation, and most earnestly would we urge an imitation of customs which would greatly improve our own condition.

Habitual Constipation.—A large proportion of women who, after puberty, marriage, and maternity, suffer from uterine disease do so in consequence of deformities of the uterus developing between the period of infancy and that of womanhood. One of the most frequent and obstinate of these is cervical ante flexion. In this state the body of the uterus does not alter its position, but the cervix is bent sharply forwards, creating a stricture at or near the os internum uteri, and causing obstruction to the escape of fluids from the uterus and interference with its venous circulation. The habit of allowing large, hard masses of fecal matter to remain not only for days but for a week at a time in the rectum, as many women do, contributes largely to the occurrence of this deformity in the soft, pliable, growing uterus of girlhood.

Alone it is sufficient to bend the uterus and give it the shape of a gourd, but, combined with pressure from above by tight, heavy clothing constricting the waist, it is not astonishing that it very often produces this common disorder of the shape of the organ. Once produced it is a condition which pretty surely results in endometritis, dysmenorrhœa, and sterility, and it is one rarely remediable except by resort to surgery.

Let me present a picture, simple and unexaggerated in its details, of millions of our women who are exposed to the baneful influences which I have endeavored to portray. The woman is flat-chested, slightly round-shouldered, and thin almost to emaciation. Her hands and feet are cold, and her facies is not one suggestive of hilarity or buoyancy of spirit. Auscultate the thoracic organs, and a slight basic murmur will be heard over the heart, and the respiration will be found feeble and inefficient.

Tell the patient to inflate the lungs fully, and the effort is so poor an one that it is seen at once that a full inspiration is a rare matter with her. She craves such stimulants as tea, and desires as food articles which are sweet. The bowels are almost invariably constipated, and an examination of the skin shows that it is inactive, and that its vessels are not filled with red blood, but shrunken and atonic.

She is nevertheless in excellent health, does a large amount of work in her house, and perhaps for a long lifetime fulfils all the requirements of her existence. So she willingly allows her daughters to follow in her footsteps. And yet how thoroughly is this woman fulfilling every indication which is necessary to cause her to fall an easy prey to disease of the sexual organs as to that of any other organ in the body!

The interdependence of the various physiological processes one upon the other is very striking. Primary nutrition keeps the blood in healthy state, respiration keeps it in active circulation, and action of the muscles stimulates and makes perfect the flow through the capillary vessels of the skin, liver, kidneys, and all the other organs of the body. Derangement in any one of these processes creates disorder in others. Impoverished blood entails imperfect circulation, deficient respiratory effort furthers this, and an inactive state of the muscles tends to production of local hyperæmia by allowing blood stasis in the deeper parts of the body. All this renders excretion inefficient, and the nerve centres soon feel the benumbing influence of a slow toxæmia. It is evident that the influences which I have mentioned tend very decidedly to disorder the system in this way.

This completes the list of those influences which, in my estimation, most markedly predispose to disease of the female genitalia in the United States. In reviewing them I trust that I have not spoken in a tone of exaggeration of any one of them.

There are two points in this connection which I would earnestly insist upon, and concerning which I feel that the medical profession is greatly at fault. The first is the prevalent idea that there is in woman an inherent tendency to disease of the sexual organs, that she is born to these affections "as the sparks fly upwards," and that an entire immunity from them is a lucky circumstance which is rather a cause for surprise. The second is the belief that, these disorders being contracted, not from avoidable but from inevitable causes, the woman herself is not responsible for them. Once falling a victim, she immediately puts herself under the care of a physician, and then very likely follows a lengthy and tedious course of local treatment.

Surely one of the highest duties of the physician is to disseminate correct views upon these points; one of his greatest derelictions endorsing them by tacit consent.

I shall deal very cursorily with the exciting causes of these diseases, for

the reason already given. I would not, indeed, have alluded to them here were it not that the opportunity for enumerating them in this connection appeared to be too important a one to be lost.

The chief of these may thus be tabulated:—

1st. Injuries inflicted by parturition—*e. g.*, laceration of cervix and perineum; pudendal and sub-peritoneal hematocele; and inversion of the uterus.

2d. Derangements of involution—*e. g.*, subinvolution of uterus, vagina, perineum, and uterine ligaments; superinvolution of uterus; fungoid degeneration of the endometrium; retention of fetal envelopes; displacements of the uterus.

3d. Congenital and infantile anomalies in shape, proportions, and position of genitalia—*e. g.*, flexion; undeveloped state of cervix, of body of uterus, or of both; contractions of cervical canal; absence or imperfect development of ovaries, and similar imperfections of the vagina.

4th. Sudden violent and unaccustomed efforts producing flexions, versions, and prolapse.

5th. The development of neoplasms in connection with any of the genital organs—*e. g.*, fibroids or cysts of the uterus, vagina, or ovaries; adenoma, sarcoma, cancer, etc.

6th. Deposits of lymph throughout the pelvis from general peritonitis—causing displacements of uterus and ovaries; ovarian engorgement and neuralgia; congestion of all the pelvic organs.

7th. Local treatment, and examination by sounds, tents, etc.—causing peritonitis, septicæmia, and cellulitis.

8th. Contamination by gonorrhœal or syphilitic virus—causing endometritis, salpingitis, pelvic peritonitis, and development of syphilitic abrasions and neoplasms.

9th. Means adopted for prevention of conception and production of criminal abortion—causing endometritis, granular degeneration, pelvic peritonitis and cellulitis, fungoid degeneration of endometrium, septicæmia, and retention of the fetal envelopes.

CHAPTER III.

GENERAL CONSIDERATIONS UPON UTERINE PATHOLOGY AND TREATMENT.

LET us suppose that a woman, born of a mother who has transmitted to her a rather feeble constitution, lives such a life as to expose herself to enfeeblement of the nerve power, impoverishment of the blood, and local

disorders of the circulation, from the predisposing causes mentioned in the last chapter. These alone are sufficient to establish in her disease of the sexual organs; or, if they do not do so, one of the exciting causes enumerated may supervene, and, falling upon well-prepared ground, the seeds of disease thus sown thrive luxuriantly. Let us consider the pathological steps by which the various pelvic diseases peculiar to her sex are developed.

Nothing more decidedly retards the progress of gynecology, lowers it as a special study in the eyes of the sister departments, and fans the dying flame of a prejudice with which it has been able successfully to contend only during the past half century, than the unsettled state of uterine pathology. In general medicine, in surgery, and in all other special departments, the study of pathology is made the keystone of the arch which supports them; and observers seem willing to agree as to fixed principles concerning it. In gynecology, this whole subject presents the melancholy aspect of uncertainty and dissension. Many of its votaries, instead of taking broad and strong views, become the partisans of some special dogma or theory, which is warmly attacked by others who hold some view equally narrow, incomprehensive, and exclusive.

As a result of this state of pathological confusion among the leading minds devoted to the department, every newly-fledged specialist feels warranted in elaborating and maintaining a theory of his own; or, in attaching himself to one of the many which present themselves for his choice.

All must admit that to this department to-day as many able, zealous, and industrious laborers are devoted, as to any other in medicine. Why should such a body weaken its influence by adherence to dissentient and partisan views? Why is one impelled to entertain the view that inflammation of the parenchyma plays the important part of moving cause in uterine disorders; another that displacements of the uterus do so; another that the chief trouble consists in an irritation or hyperæsthesia in the uterine nerves; another that catarrhal inflammation of the uterine mucous membrane is the origin of most of its disorders; while still another attributes to the inefficient restoration of the uterus after the structural changes due to utero-gestation, the most important role? To one who calmly and dispassionately considers the subject, not in the study, but by the bedside, and who goes to it with a mind free from prejudice, and eager for the discovery of truth, it appears to me that it must in time become evident that truth lies not in any *one* of these theories, but is to be found to a certain extent in each. No pathologist claims that hepatic, or cardiac, or renal disease has always the same pathological origin; why should any one expect to find for uterine disorders a universal pathogenic factor?

At no period in modern times has this department been so favorably and respectfully regarded, by the science of which it is a part, as at pre-

sent. Now, then, has the time arrived when every one of its well-wishers should strive to obliterate all factions and parties, to free it from dogmas and narrow views, and place it where it should always have stood, upon the broad platform of an enlightened pathology.

That the uterus should perform its functions efficiently and naturally, it is essential, 1st, that its innervation and circulation should be normal; 2d, that its structure should be unaltered in character and proportions; and 3d, that no decided and permanent change should have occurred in its position. An abnormal state, developing in connection with any one of these essential conditions, may derange the functional powers of this important viscus, and demonstrate itself by symptoms which produce greater or less discomfort to the woman. When, as very often happens, the first evil produces others, until at last all three conditions are interfered with, the gravity of the symptoms increases with simultaneous increase in their number and variety. Sometimes the first link in the chain of morbid action is an altered condition of the nerves governing circulation, some general or local condition reflecting itself upon these regulators of nutrition; as a consequence, an afflux of blood takes place to the uterine mucous membrane, and its vessels become distended, and in time dilated. This lasts for a variable time, when the second link is furnished in this manner: an excessive degree of nutrition is supplied to the subjacent connective or areolar tissue of the organ, and its size and weight increase. Then the third link rapidly develops itself. The uterus now being heavier than normal, its natural and hitherto sufficient supports are insufficient for its maintenance in position, and it descends in the pelvis, sometimes so as to alter the direction of its axis, and protrude between the labia majora; at other times its axis is not changed in its descent, and then the cervix, striking against the curved surface of the sacrum, is bent forwards so as to offer an obstruction to the escape of menstrual blood; at others, the fundus falls forwards, laterally, or backwards, either bending upon the neck, or by its displacement forcing this part out of position likewise. Then appear, as symptoms of this threefold disturbance, leucorrhœa, backache, dysmenorrhœa, difficulty in locomotion, and the long list of discomforts to which women thus affected are liable.

This, however, is by no means always the sequence of events. Sometimes the uterus enlarged by utero-gestation does not return to its original small size, but remaining large and heavy, it falls from its place in consequence, and this disorder of position reacts upon the other two conditions which I have stated are essential to health—normal innervation and circulation, and an unaltered state of the structure of the organ.

Again, a uterus may be in a perfectly normal state in every respect, when suddenly it becomes retroverted. As a consequence, innervation and circulation are at once disturbed, congestion occurs, a hypergenesis of tissue gradually takes place, and thus what was originally merely a dis-

placement becomes a condition of congestion, enlargement, and chronic catarrh.

The position which I assume, with reference to the pathological series which may result in confirmed uterine disease, is this: that the pelvic organs of a woman who has hitherto been in perfect health may become gradually or suddenly diseased by one of the three following abnormal developments in the uterus: 1st, disorder in innervation and circulation; 2d, change in quantity of connective or muscular tissue; 3d, change in position. I assume, furthermore, that, the first here mentioned being the primary lesion, the second and third may result from it; that, the second being the primary lesion, as in subinvolution or the development of neoplasms, the first and third may result from it; and that, the third primarily showing itself in a perfectly healthy organ, the first and second may be its consequences.

Let us now proceed one step further. Those primary pathological conditions which most commonly produce disorder in the three elements which I have mentioned, may be said to constitute the especial factors of uterine disease. What are they?

1st. Catarrhal inflammation of the lining membrane.

2d. Prolonged congestion of uterine tissues.

3d. Excessive growth of connective or muscular tissues.

In the beginning one only may exist, uterine catarrh, for example; in time this may induce another, congestion in the parenchyma; and still later, this excessive blood supply may result in a third, hypergenesis of connective tissue. Whatever then tends to induce and keep up any one of these three morbid states, tends directly to the establishment of confirmed uterine disease, and the consideration of this point brings us to the investigation of the individual pathological agencies which ordinarily produce such a result.

1st. In the very large majority of cases of uterine disease, the first link in the morbid chain is subinvolution, which produces as direct consequences, passive congestion, hypersecretion by lining membrane, menstrual disorders, displacements, sterility, and interference by pressure with neighboring organs.

2d. A certain number of cases is produced by disordered uterine circulation and innervation, the results of displacement of the uterus, either as a whole or by bending of itself upon its axis. Such displacement or distortion induces passive congestion, hypergenesis of tissue, dysmenorrhœa, sterility, and endometritis.

3d. A certain number of cases arises from primary catarrhal inflammation of the lining membrane of the uterus itself. This, commencing as an entity, results in hypergenesis of tissue, displacements, menstrual disorders, and sterility. .

4th. In a number of cases by no means small, the circulation, innervation, and size of the uterus are interfered with by obstruction to the escape of menstrual blood. Such obstruction distends the uterine cavity by the imprisoned menstrual discharge, inflames its lining membrane, and results in leucorrhœa, dysmenorrhœa, hæmatocele, and flexions.

5th. In some cases the uterus is, by sympathy with diseased ovaries, kept in a condition of exalted innervation and deranged circulation, which, in time, eventuates in congestion of the whole organ and hypersecretion by the mucous lining. As consequences of these states, there appear as symptoms, leucorrhœa, menstrual disorders, displacements, sterility, etc.

6th. The development of benign or malignant growths, consisting of hyperplasia of one or more of the uterine elements, often deranges the innervation, circulation, and proportionate weight of the uterus, and results in displacements, sterility, menstrual disorders, leucorrhœa, pelvic pains, mechanical interference with surrounding organs, etc.

7th. The uterus, although not primarily affected, may become displaced and congested from interference by contracting lymph, exuded in contact with it and over its surface, as a consequence of pelvic peritonitis. Such displacement and congestion may result in excessive growth of tissue and endometritis.

8th. Disease not only of the neck but of the body, and not only of the mucous membrane but of the proper tissue of the organ, is often induced by laceration of the cervix, which results in eversion, and the exposure of a large and vulnerable surface to friction and injury during coition and exercise.

9th. The genital organs are often kept in a state of erethism and hyperæmia by a neurosis, such as vaginismus, or a point of intense nervous excitement, such as fissure of the anus, which may develop into absolute disease.

Let the pathological state which establishes the disorder be what it may, after it has continued for some time and its instrumentality has resulted in fixed disease, the following symptoms develop as characteristic of such disease: leucorrhœa; menstrual disorders; pain in back, loins, and pelvis; sterility; hysteria or nervous symptoms; gastric, intestinal, and vesical derangements, etc. They are confined to none, but in time mark all.

That congestion constitutes one of the pathological steps in the process is beyond question; but how short-sighted, how superficial, to make it a sole factor, to declare it to be "fons et origo"!

With these facts before him, the student may well ask, how any logical mind could consent to adhere to an exclusive pathological doctrine, ignoring or denying others of unquestionable importance and significance? It has, I think, been done by confounding cause and effect. He whose mind is hampered by the theory of inflammation will find it in every case of long standing, in the mucous membrane, for congestion of this produces

hypersecretion; and in the parenchyma, because hypernutrition in this part has resulted in hypergenesis of tissue. The uterus is large, tumefied, secreting excessively, and tender to the touch; all these prove for him "inflammation" to exist. In the great majority of cases in which a diseased uterus is examined after it has been in an abnormal condition for a long time, the following physical signs will be discovered:—

- 1st. The uterus will be larger than normal.
- 2d. Catarrh of the lining membrane will exist.
- 3d. The vaginal face of the cervix will be in a granular condition.
- 4th. The uterus will be displaced.
- 5th. The ovaries will be found slightly enlarged and sensitive.

Here are five theories offering themselves for adoption, and in a conclave of five consultants, each might hold an unassailable ground, and each might possibly be right. But, as no one has the key to the progressive development of the complex condition, no one can prove himself so. According to my observation, the analysis of this collection of morbid states, which most frequently furnishes the key to their solution, is this:—

Involution of the uterus was interfered with some years before, and subinvolution existed for a while, and gradually resulted in areolar hyperplasia;¹ this soon resulted in displacement, which impeded venous action; from this, a uterine catarrh arose, which excoriated by its discharge the vaginal face of the cervix; from this cause, combined with friction, granular degeneration took place; and the irritation transmitted by this complication of irritating influences created enlargement and sensitiveness of the ovaries.

I say, that, according to my experience, the most common factor of this series is subinvolution; but I do not say that it is the universal factor. It may be that all these lesions arose from congestion due to retroversion which has been neglected, and has long prevented free venous return. Or, perchance, the large granular surface, which has been called an "inflammatory ulcer," is an eversion of the cervical mucous membrane due to rupture of the cervix, which occurred five years ago in parturition, and has kept up nervous irritation and hyperæmia, which have resulted in all these "signs of inflammation."

Impressed by the fact that, with many of the physical and rational signs of inflammation, the enlarged, sensitive, and engorged uterus is not inflamed; one party has endeavored to cut the gordian knot by styling the anomalous state one of "irritability." But the term was badly chosen, and its introduction has accomplished more of confusion than of simplification, nor have the profession generally been willing to accept a name

¹ Hypertrophy signifies excessive growth or enlargement of a tissue already existing: hyperplasia signifies the development of new tissue.

signalizing the nervous condition alone for a state characterized by congestion, hypergenesis of tissue, and coincident, probably resulting, nervous exaltation.

But, it may be asked, is not this condition of enlargement of the uterus after all a state of inflammation, of chronic metritis, however it may have arisen? I answer, no more a condition of chronic inflammation than is the enlargement of the tonsils which lasts for years in children; or than the tender, enlarged spleen, the ague cake of malarial poisoning; or than the enlarged testicle of syphilis. I do not deny the name and character of inflammation to suppurative tonsillitis or quinsy, to the orchitis of gonorrhœa or even to that very rare disease splenitis, which sometimes ends in suppuration. Let the unprejudiced reader reply to this question from his own observation: does the state of the uterus which we are considering most resemble the former or the latter of these pathological states? I cannot doubt his reply.

These remarks apply not only to the partisans of the dogma of inflammation, but to those of all the others which have been adopted. He who wishes to sustain his views and his party by finding displacement will almost always do so, for a heavy uterus, which was in normal position in the beginning, generally falls from its place in time; he who looks for uterine catarrh will likewise be gratified, for a congested mucous membrane always gives forth an excessive secretion; and even he who will be satisfied with nothing but ovarian disease will often be able to sustain his theory, for chronic uterine disorder is very apt to affect in time these organs, which are so intimately in sympathy with the uterus.

Prognosis in Uterine Affections.—There is no organ of the body the diseases of which offer greater difficulties in prognosis than those of the uterus. So much depends upon the habits of the patient, the injurious influences to which she is exposed, and the faithfulness with which she follows out the directions of the physician, that often very little can be predicted, very little promised with any certainty. The error into which the incautious practitioner is most likely to fall is that of predicting a cure at too early a period, and fixing some definite time for its accomplishment. The patient may declare that she and her friends will be satisfied even if the limit be fixed not by months but by years, nevertheless she is desirous of knowing *when* she may confidently expect a cure. The answer to this question, not in the lesser interest of the practitioner, but in the greater one of the patient, must often be, that no such time can possibly be determined upon. In some cases it becomes necessary to state further that not only is the time but the certainty of complete cure doubtful; that local treatment will cause pain, may result in danger, and may absolutely aggravate the existing symptoms.

Another point which influences prognosis is this: in the management of uterine diseases it is of primary importance that the practitioner should

enlist the interest and co-operation of his patient. Should she be apathetic with regard to the result, or even, having begun treatment with enthusiasm, become disaffected from any cause, his duties will probably prove irksome, annoying, and fruitless. For this reason he should be cautious in urging with too great earnestness the adoption of local treatment.

In view of this, and the additional fact that treatment may extend over months before a cure is effected, the physician should avoid all resources which by their uncleanliness or disagreeable nature may disgust a refined patient, or make her rather willing to bear her disease than the means adopted for its cure. If such means will be very likely to give relief, they should of course be employed; but if, as is the case with many of them, their efficacy be extremely doubtful, they should not be insisted upon. For example, if a lively, fastidious lady were called upon, for the relief of an endometritis which is not in itself very annoying, to forego society and spend most of her time in bed, to fill the vagina daily with a semi-solid mass of powdered linseed after the method of Mélier, to rub mercurial ointment over the hypogastrium, and have a weekly application of leeches around the anus, she would probably in time get tired of the treatment, and lapse into the very state of apathy to which I have alluded.

There is one class of cases in dealing with which I should especially recommend that perfect frankness be observed. It may be represented by a patient who has been persuaded by husband, mother, or friends, contrary to her wishes, to submit to treatment. She utterly repels the course to be adopted, is sure that it will do her no good, is unwilling to fulfil the directions left her for daily guidance, but yields, under the assurance of her advisers that the treatment will be free from discomfort, give no pain, and will surely cure her in a few weeks. The physician, for the sake both of his patient and himself, should avoid joining in this deception. Stating the facts fully to her, telling her of the danger which neglect will involve, and of her duty under the circumstances, he should appeal to her reason, and decline to take charge of her case until she really desires his services.

Reasons for the Frequency of Failure in the Treatment of Uterine Diseases.—That some uterine affections of non-malignant type are incurable cannot be denied; but even putting these out of consideration, the fact is notorious that the local treatment of these diseases is not as successful in its results as we could wish. I now propose an investigation into the causes of this want of success. It appears to me that the most apparent and most constant of them may thus be summed up:—

- Imperfect diagnosis;
- Erroneous prognosis;
- Inefficient or inappropriate therapeutics;
- Inattention to general management.

Imperfect Diagnosis.—It is not rare to meet with instances in which physicians have, for months, treated cases of uterine disease concerning the nature of which they not only did not have a correct theory, but had no theory at all. Under these circumstances the most general practice is to pass, about once a week, a solid stick of nitrate of silver up to the os internum, not to cure cervical endometritis, for that has never been suspected, but to do the best one can in the way of treatment, when he does not know the nature of the disease which he treats. I have no inclination to attribute this always to any intentional laxity of morale, but rather to indecision and aversion to creating a disagreeable issue with the patient. It is, however, impossible to deny the fact that such a course will sometimes be pursued by those who, in the case of a diseased eye or inflamed knee-joint, would not hesitate to confess, with the utmost frankness, their uncertainty and need of assistance. With uterine, as well as all other diseases, the diagnosis must be properly made before treatment can prove curative; and in this field of practice, fully as much as in others, honesty and sincerity should guide the practitioner. He who practises deception here, is surely no less culpable, although far more likely to escape detection, than the charlatan who makes it a rule of life.

Erroneous Prognosis.—Even if the diagnosis and treatment be correct, an erroneous prognosis as to time of cure may so sap the confidence of the patient as to send her to other counsel. And now she may run the gauntlet of theories and therapeutics. Her first attendant having recognized endometritis with resulting displacement, the second may treat the displacement alone, as the origin of her symptoms. Passing into the hands of a third, she may be told that to check her profuse leucorrhœa would be to cure her disease, which the fourth might contradict, with the assertion that the uterine disorder was only a complication of ovaritis, which was the fountain of all her difficulties.

Inefficient or Inappropriate Therapeutics may cause failure in cure even when a proper diagnosis and prognosis have been made. At times a course of local alteratives may be persevered in when the disease demands more general treatment. At others it is necessary to extend treatment into the cavity of the body, and not of the neck alone; and at others still, to perform a trifling surgical operation to remove a difficulty which, unless removed, may keep up the disease indefinitely.

The best results in the management of these affections will not follow a direct resort to treatment of the most prominent existing disease, but will very often be obtained by removal of its cause, or the alleviation of its complications. Let me make my meaning clear by some examples. The physician examines and finds endometritis to exist with its usual symptoms, leucorrhœa, pain, menstrual disorders, etc. This affection may be the result of an antecedent displacement. If it be so, replacing and retaining in position the displaced organ should be the first step in treatment,

as it was the first step in diseased action. *Causa non sublata tollitur non effectus*, is as true as the converse proposition. Again, a patient has menorrhagia and prolonged menstruation, with a long, contracted cervix uteri. Obstruction to the ready escape of menstrual blood often so alters the lining membrane of the body of the uterus as to create these disorders. If the physician treat the symptom, he will surely fail in curing it, while success will attend his efforts if he remove the obstruction which prevents the uterus from emptying itself.

So also with the complications which are excited by uterine disorders. A patient is affected by cervical endometritis that in time produces hyperplasia, which by increasing uterine weight displaces the uterus. That organ lying upon the floor of the pelvis is injured by locomotion and coition, its lower segment is bathed in purulent leucorrhœa, and great pelvic pain annoys and harasses the patient. If the practitioner expects to cure her, let him, at the same time he treats the primary disease, the endometritis, relieve a set of complications which, unless removed, will cause repeated relapses as often as he approaches the accomplishment of his end.

One more example may be cited before concluding these remarks. A displacement of the uterus exists, and the practitioner knows that it has been due to one of two influences, either increase of uterine weight, or loss of uterine support. Which was primary he cannot determine, for at the time of his examination both exist. To effect a cure it would be the part of wisdom not to limit treatment to one, but simultaneously to treat both by giving artificial support, and diminishing uterine weight. Without being able to say which is the original disease and which the complication, he should endeavor to relieve both at the same time. And here, unfortunately, the patient is liable to come in contact with the personal prejudice of her attendant; he does not approve of pessaries. Why? Because he has seen them do great damage! Yet he does approve of splints, of the catheter, of anaesthesia, and of opium! Very likely he has not given an hour to the investigation of this important subject in his whole professional career. How often do patients come to those specially treating these diseases, after years of treatment from such prejudiced practitioners, with anteversion, retroversion, or slight prolapse, and, obtaining immediate relief, ask in surprise the significant question, why was this not done long ago?

The surgery of gynecology is new, and like every new and decided improvement it has been abused by indiscreet and frequent resort to it in cases not requiring other than medical treatment. This has aroused a prejudice against it in the minds of many excellent conservative men. Nevertheless it must be apparent to every progressive gynecologist that the future advances of this department are to depend in great degree upon surgery, that the gynecologist of the future must necessarily possess sur-

gical attainments, and that he who ignores this patent fact will surely prove unequal to the task which he undertakes. The day is not far distant when a gynecologist without surgical ability will be as impossible as an ophthalmologist is to-day, and much evil results at present from the existence of the contrary state of things. It is impossible to estimate how many thousands, I would even say millions, are now and have been for years under treatment for various uterine disorders who could in a month be restored to health by trachelorrhaphy; how many wearing pessaries for a lifetime for posterior and anterior displacement could in the same time be permanently relieved by perineorrhaphy; and how many suffering lengthily from the discomforts reflected from anal fissure would be immediately relieved by stretching the sphincter ani.

Every man is loath to acknowledge incapacity to patients who believe him to be possessed of all medical science; and in some of these cases, for years the patient is allowed to bear suffering, inconvenience, and expense by reason of the vanity and incompetency of her physician. In other cases the practitioner is not aware of the facts which are here stated, and he errs without fault, for these views are not generally known and accepted. That they will be, however, is as sure as that "truth is strong and must prevail."

Inattention to General Management and Hygiene.—The statement which we often meet with, that the majority of the cases of uterine disease require no local treatment whatever, is a fallacy, based either upon strong prejudice against one of the most important modern improvements in medicine, or upon want of experience in such cases. But too much stress cannot be laid upon the advantages to be derived from constitutional treatment and the general management of these cases. We too often fail to insist upon rest, cessation of marital intercourse, quietude after applications to the uterus, and other points, a neglect of which may exert a powerful influence for evil, and frustrate the effects of all that is done by local means.

Astruc begins his directions for treating uterine ulcers by advising—

"To charge the patient to abstain from all kinds of exercise, and to keep constantly laid down on a long seat.

"It is for the same reason fit, in the case of a married woman, that she should lie separately from her husband.

"They should for the same reason guard against all the passions of the mind that may agitate it, as grief, uneasiness, and anger, etc."

This advice, given over a century ago, is often neglected to-day, and too much reliance placed upon local means, and upon them alone. Every one who has had experience in the treatment of these disorders must have been struck with surprise at the wonderful improvement exerted upon cases, which have long resisted local means, by a sea-voyage, a visit to a watering-place, a course of sea-bathing, or a few months passed in the

country. Not only is this improvement manifest in the general state of the patient; it shows itself locally, also, and in some cases complete recovery may be thus attained. The same fact is equally noticeable in old ulcers of the leg; local means, the efficacy of which in such cases no one doubts, having failed in producing good results, entire recovery is effected by means, such as those alluded to, which act upon the constitution.

I remember having had this very decidedly impressed upon my mind by the following case: I had for months been treating a delicate lady for marked retroversion with cervical endometritis and hyperplasia, the results of an old subinvolution. Suddenly her friends made up their minds to visit the Holy Land, and she was eager to accompany them, and applied to me, not for permission, but assent, for she had evidently determined to go before consulting me. A great part of the journey was to be made on horseback at a very slow gait, and I really feared that she would be made very ill by it. To my surprise, however, she rapidly improved, and returned to this country better than she had been for years. And yet upon examination I found the uterus still out of position, and granular degeneration of the cervix still existing, though much improved.

It should not be forgotten by the gynecologist that chronic local disease is often caused by a general depreciation of the system. In some cases the lungs undergo chronic pneumonic consolidation, which often goes on to phthisis; in others, chronic corneitis or granular lids occur; while, in others still, cervical endometritis marks the altered constitutional condition. When such a result takes place, the two states continue to react one upon the other. The depraved system increases the local disorder to which it has given rise, and the irritation, kept up by the latter, aggravates the degree of the former. This being true, it would evidently be irrational to treat one of the two existing pathological conditions without having due regard to the other. Some cases of endometritis, however, occur in women who are apparently in good health, and are usually the consequences of parturition or abortion. But cervical, and even corporeal endometritis, the latter of which may go on to granular degeneration, will generally be found to have engrafted themselves upon a depreciated system.

The following case is illustrative of this view. Dr. Alfred E. M. Purdy brought to my office, for examination, a patient who had two uteri and two distinct vaginæ. As I proceeded to examine, he stated that the right uterus was affected by granular degeneration. I discovered, however, that both were thus diseased. Dr. Purdy had not examined for some weeks, and, during this period, the general state which had produced disease in one uterus had effected the same change in the other. It may with justice be objected that both may have been produced by a local cause. None such could be discovered, the patient having been exposed to no local influences which had not existed for years previously.

CHAPTER IV.

GENERAL CONSIDERATIONS UPON SOME OF THE MOST IMPORTANT
THERAPEUTIC RESOURCES OF GYNECOLOGY.

It is not my intention to devote a chapter here to the general consideration of the ordinary therapeutical resources of this department, but, as some of the most important of these should be especially considered and described, I prefer to do so here, rather than scatter them in a desultory manner throughout the work where some of them might escape notice.

At the same time that the judicious practitioner should avoid routine, he should not allow himself to confound in his mind the two terms routine and system, and, while no two cases should be treated exactly alike, a general plan will apply with greater or less exactness to many.

General system of diet and exercise for restoring the depreciated nerve and blood state ordinarily attendant upon the pelvic diseases of women.

As a rule these cases require a general tonic plan of treatment. There are, however, a few exceptions to the rule, such, for example, as cases in which the neurasthenia and spanæmia so universal as consequences have not as yet arisen, because the patients have not been long enough exposed to the pathological condition.

The following are the directions which I give to patients for a general plan :—

1. While you are under treatment, remember that a great deal will depend upon your cordial co-operation and intelligent endeavor to carry out instructions.

2. Eat fresh animal food three times a day, and as much other nutritious food, such as bread, crushed wheat, potatoes, rice, eggs, etc., as you can.

3. Between breakfast and the mid-day meal, the mid-day and evening meal, and upon retiring at night, drink a tumbler of milk, or a teacupful of beef tea, or of mutton or chicken broth.

4. Every morning upon rising, and every night upon retiring, take a sponge bath of warm water strongly impregnated with table salt, about a teacupful to an ordinary basin of water. Then rub thoroughly and briskly with a rough towel: the knitted tape towel is the best.

5. After each bath exercise for ten minutes briskly with dumb-bells, the rowing machine, or light calisthenic rods, breathing during this time freely and as deeply as possible.

6. Endeavor to sleep for nine hours every night, and, for one hour at

mid-day every day remove the outer clothing, lie quietly in bed, remain entirely without occupation, and if possible sleep.

7. Have an action by the bowels once in every twenty-four hours. If constipation exists, take a tablespoonful of this prescription every morning on waking, in a half tumbler of cold water—

R.—Magnesiæ Sulph. ℥iv.

Ferri Sulph. ℥ss.

Acidi Sulph. Dil. ℥ij.

Aquæ, ℥xvj.—M.

8. During menstruation keep very quiet, and at all times avoid violent muscular exertion and fatigue.

9. Use every-night and morning a copious vaginal injection of very warm water, by the method explained to you.

10. Be sure that the clothing be loosely worn, and that all weight of skirts be carried upon the shoulders and not upon the hips.

It is tiresome for a practitioner seeing a large number of new patients daily to repeat these directions to each. He is very apt too, even if willing to assume the labor, to forget some of them, and, even if he do not, the patient is very sure to do so. It is therefore very useful to have them printed upon a slip of paper, so that a copy may be carried home for reference and future guidance.

Of course, in addition to these, special cases will require particular prescriptions, and directions as to use of stimulants, etc. If the patient is to wear a pessary too, I am in the habit of giving another list of directions having special reference to the management of this, which will be given in connection with that subject.

Pessaries.—Uterine pessaries hold a prominent position among surgical appliances, as a means of procuring palliative and curative results. Like all other mechanical means which are powerful for good, they are capable of doing a great deal of harm. Were I asked at the present moment whether I believed that in the aggregate they accomplished more good or evil, I should be forced to give a doubtful reply, great an advocate as I am of their use. Their injurious consequences I would attribute, not to the instruments themselves, but to the improper manner in which they are very often used, and the carelessness with which they are allowed to remain *in situ* without observation. If splints were applied to broken bones and never examined until union was effected, their utility would soon become doubtful. Pessaries should be carefully watched, for they sometimes create cellulitis, peritonitis, and vesico-, recto-, and utero-vaginal fistulæ. In some cases they have been known to pass completely out of the vagina, into the rectum or bladder. Some years ago a case entered the service of Prof. L. A. Sayre, of the Bellevue Hospital Medical College, presenting very obscure symptoms of uterine disease. Examination proving that some foreign substance existed in utero, Prof. Sayre dilated

the cervical canal, and extracted a globe pessary which had migrated from the vagina into the uterus, and been retained there for a length of time.

Whatever pessary be employed, it should sustain the displaced uterus without creating pain or discomfort. Should any such inconvenience be produced, it should be at once removed, for the most violent cellulitis and peritonitis may result. While a pessary is kept in the vagina, cleanliness should be secured by daily vaginal injections, and at intervals, not exceeding two months, it should be removed, examined, and reintroduced.

One of the difficulties attending the use of these instruments in general practice, unquestionably arises from the fact that a great deal of experience is necessary before any one can use them with certainty of accomplishing good results. But another is due to the practitioner having only a small supply from which to choose. He who habitually employs this means should have at his disposal a large and varied assortment, and should possess sufficient mechanical ingenuity to mould and adapt these to the special requirements of cases which may present themselves. The vulcanite pessary may be given any shape after being heated, and metallic ones may be readily moulded by the fingers.

Whether a suit for malpractice has ever arisen on account of injury done by a pessary, I cannot say, but I can easily imagine such a source of litigation. Every practitioner should bear in mind, that injury done by a pessary does not argue ignorance on the part of its introducer. When one removes, as every gynecologist must often do, a pessary from a position in the pelvis in which it has become imbedded, and finds, as its result, a ragged, ulcerative tract existing, he is very apt hastily to conclude that the instrument was improperly applied. This is by no means always true. I have repeatedly removed pessaries under these circumstances, which had been introduced by the most competent gynecologists. How common it is to find a pessary which one has carefully introduced, turned completely upside down at the end of a week. The migratory and evolutionary performances of the vaginal pessary are truly wonderful. These facts being recognized and admitted by all, the evident deduction is that it is unjust, as it is unprofessional, to expose to a patient, at the expense of an absent colleague, every lesion which these difficult instruments have created. To tell a patient that the instrument she wears has made a deep ulcer in the vagina, is to tell her that her attending physician has been guilty of a gross blunder; for "ulcer," in the popular mind, means anything that is frightful in the way of lesion, from erythema to carcinoma. And although the statement is literally true, he who makes it knows that the same accident has happened to himself many times, that a week of rest will entirely efface it, and that no real damage has resulted to the patient from its occurrence. It cannot be denied that even in our day there are those in our profession whose minds have not yet become disen-

thrilled from the prejudice against gynecology which existed up to a half century ago. These too often forget that the observance of professional ethics should rise superior to the promptings of an illiberal sentiment, of which every day is proving the injustice and fallacy. It is a matter not of courtesy, but of professional honor, to protect the interests of a brother practitioner, as far as the patient is concerned; much more so, where the question concerns his reputation with the public upon whose esteem his usefulness depends.

Some years ago a case in point occurred to me, which was so instructive in this connection that I venture to detail it. A lady called upon me for treatment for anteversion, after having been for some months under the care of an advertising charlatan of this country. Upon removing a very coarse and clumsy retroversion pessary, I found a deep and ragged ulcer which had penetrated by its lower extremity into the tissue intervening between the vagina and bladder. It was deep, large, and ragged. The temptation was very strong to expose the user of this instrument, and to make the ulcer the text of a discourse upon the employment of ignorant pretenders by the public, but upon second thought I refrained, put the patient upon appropriate treatment, and, as she lived out of town, directed her to return in three weeks. At the end of that time she came back, and, as the ulcer had healed, and all vaginal irritation had disappeared, I inserted an anteversion pessary, and sent the patient home, directing her to see me again in a week, as that proved to be the earliest moment at which it would be practicable. In a week she returned, and to my mortification I found that pressure of the uterus upon the pessary had created a large and ragged ulcer. The only difference between that created by myself and by the charlatan was, that mine was a little the larger and more vicious in appearance.

It is this very danger which now makes me so scrupulous about examining an anteversion pessary repeatedly during the first ten days of its sojourn in the vagina.

In spite of all its attendant evils, the use of the pessary is, as I have said before, one of the most important points in gynecology, and every practitioner of that art should make it a faithful, special, and constant study. I confess that when I am told, as I sometimes am by physicians, that they never use pessaries, because they are so strongly prejudiced against them, the question always arises in my mind, then how and why do you treat uterine diseases? How pessaries can be dispensed with is to me one of the unfathomable mysteries of gynecological practice. And why any one should practise an art and ignore a means which, properly mastered, constitutes one of the most powerful and reliable of its resources, is equally incomprehensible.

I think it an excellent plan for the physician who has inserted a pessary to give to the patient some such written directions as those which follow,

urging her, in case of trouble from the instrument, to refer to and closely abide by them.

1st. You are wearing a pessary. If it give you pain, pass your finger into the ring which you will feel and draw it away. Do not mind a little discomfort in doing this, but do it without fail.

2d. If after this you suffer pain, go to bed and send for a physician.

3d. Every night and morning put one or two gallons of hot water in a tub, sit over this, and with the "Davidson's syringe" syringe out the vagina for five minutes. The water should be as warm as you can comfortably bear it.

4th. Wear your clothing as loosely as possible, using "skirt supporters," and not wearing tight corsets.

5th. Keep the bowels regular, securing one action every day.

6th. Avoid, as much as possible, going up stairs, lifting heavy weights, using the sewing machine, and riding in a rough vehicle.

7th. Lie down for an hour at midday every day, and keep very quiet at menstrual periods.

8th. Remember that attention to these directions will have an important influence on your recovery.

Precautions to be uniformly observed in operations upon the sexual organs of the female, for prevention of septicæmia and pyæmia.

One of the greatest achievements of modern pathology has been the discovery of the agency of certain families of lowly organized nomads and micrococci in the production of diseased states which the humoral pathology of the olden time had traced to the blood. Although the subject, born only twenty years ago, is still in its infancy, a great deal has already been accomplished in reference to it, and it is not too much to hope that the path has been struck which is destined to lead to an elucidation of "contagion,"—"the pestilence," as Holy Writ expresses it, "that walketh in darkness." Those who were chiefly instrumental in establishing our knowledge upon this point are Virchow, Rindfleisch, Recklinghausen, Hueter, Vogt, and Klebs.

During the last ten years the subject has received great attention, and diphtheria, septicæmia, pyæmia, malignant pustule, scarlet fever, variola, and, according to Letzerich, whooping-cough are classed among diseases due to fungi or micrococci. The only ones of the affections which specially concern us are pyæmia and septicæmia, which, although many dissent from the view, it is very generally agreed originate in the introduction into the blood of bacteria of the rod and globular variety. These, being absorbed by bloodvessels and lymphatics upon a wounded surface, are distributed through the system, causing decomposition of the blood, and resulting in septicæmia, pyæmia, septic emboli, thromboses, and localized inflammations.

Upon theoretical grounds a pathological discovery of this peculiar

kind would have been naturally expected to emanate from the pathological laboratories of Germany. But for Great Britain was reserved the honor of utilizing the seductive theory. Lister, of Scotland, basing his researches upon the facts just mentioned, endeavored with wonderful success to prevent the entrance of bacteria into the blood during and just after any suddenly occurring solution of continuity. These products of the vegetable world may be encountered anywhere, but are especially met with in hospitals and other² places where the sick are crowded together; for example, upon the walls, floating in the air, upon the hands of surgeons or assistants, upon instruments, ligatures, sutures, dressings, bandages, and sponges.

To be secure then against the entrance of bacteria into the open vessels of wounds, the greatest care must be exercised. Prof. Zweifel,¹ of Erlangen, once performed an operation for closure of a vesico-vaginal fistula, and lost his patient from septicæmia on the twelfth day. Antiseptic measures had been carefully observed, and he was at a loss to account for the accident, until he examined by the microscope the catgut used for suture. This, although kept in carbolized oil, he found filled with bacteria, which he thought were thus introduced into the economy.

Not only are instruments, needles, thread, etc., to be carefully disinfected, the room in which an operation is performed should always be carefully cleansed and disinfected likewise. The experiments of Pasteur² prove that the germs of such organisms as micrococci, bacteria, etc., are everywhere present in the air, especially in that of hospitals, which likewise contains floating in it pus globules and spores of epiphytic parasites which emanate from diseased organisms. In 1865 Broca had the walls of St. Antonio Hospital sponged, and in the liquid expressed from the sponges he detected pus globules. In 1861 Eiselt, of Prague, placing an instrument analogous to Pouchet's *aëroscope* between two beds of a ward occupied by thirty-three children suffering from purulent ophthalmia, distinctly detected the presence of pus globules floating in the air. Nepveu, of Paris, had one square metre of wall in the surgical ward of La Pitié sponged, and discovered in the liquid expressed micrococci in large amounts, several micro-bacteria, epithelial cells in small number, several pus globules, several red globules, and, lastly, irregular blackish masses and ovoid bodies whose nature was unknown.

It is against the agency of these poisons that cleanliness as strict as it is possible to make it, circulation of pure air in the chamber of the patient, and all the antiseptic measures so fortunately introduced by Lister seem to guard.

In boracic, sulphurous, and carbolic acids, and other chemical com-

¹ *Centralblatt für Chir.*, No. XII. 1879.

² *Révue Méd. de l'Est, Révue de Therap.*, No. 23, 1874.

pounds, have been found septicide agents capable of destroying these lowly organized germs. Of these Lister has found carbolic acid to be the best up to the present time; and, by thoroughly cleansing instruments, hands, dressings, and sponges, and by saturating not only them, but the atmosphere coming in contact with the abraded surfaces, with carbolized water, he has so completely closed every avenue of bacterial approach that sepsis and its consequences have been to a great extent prevented.

Should the theories of Lister prove to be true, and they certainly promise so to do, surely the fact will not be disputed that no one of his predecessors has accomplished more brilliant results for practical surgery than he. Unless we are greatly in error, thousands of lives have already been saved by his efforts, and who can estimate what the future will bring forth? His methods may all be changed, and the use of the spray may pass away, but the grand principle, the pivotal truth which he has given us, will probably live forever.

Let the gynecological surgeon keep constantly before his mind the fact that uncleanness goes hand in hand with bad, and cleanliness with good surgery. Simple as this agency seems, it is the sole one upon which rests the greatest advance of modern surgery. Emmet says, truly, "many a woman's death warrant is carried under the nails of her surgeon." Many years ago a humorous medical writer, half in jest, elevated the tongue-scraper to a place of dignity in the treatment of dyspepsia. The nail-brush, in serious earnest, deserves such a position as a prophylactic of lymphangitis and septicæmia.

It is a well-authenticated fact that the scratch of the lion, tiger, *et id genus omne*, even when very insignificant, proves dangerous through erysipelas and lymphangitis, which are very apt to ensue. The claws of these predatory carnivoræ are constantly charged with decaying animal matters, the accumulation of years, and they infect the wounds which they make as the lancet of the vaccinator, the poisoned arrow of the Indian, or the nails of the uncleanly surgeon do.

Nowhere is cleanliness of such primary importance as in obstetrics and surgery. In every exploration, every, even the most trivial, operation in gynecology and obstetrics, Lister's methods, except the spray, should be strictly observed, and in all grave operations the spray too should be employed.

The following rules should always be observed in operating on the female genitalia:—

1st. Before and after every operation wash all instruments in very hot carbolized water, and during every operation keep all instruments immersed in carbolized water. This should especially be observed in regard to needles and sutures.

2d. In all laparotomy operations pursue Lister's antiseptic method fully.

3d. Where the spray is not employed, always bathe denuded surfaces, both before and after apposition, by suture, with carbolized water.

4th. Always destroy sponges used in an operation which admits of the possibility of these being contaminated by septic fluids, and when they are employed a second time always have them immersed previously in boiling carbolized water.

5th. After all operations upon the uterus bathe or spray the vaginal portion of the organ with carbolized water, and tampon lightly for twenty-four hours with antiseptic cotton. This being removed, syringe the vagina with carbolized water at short intervals.

6th. After all operations on the pelvic organs syringe the vagina with carbolized water as often as once in every eight hours.

7th. After all operations quiet pain and nervous excitement by opium.

8th. Before all grave operations give a full dose of quinine, ten to fifteen grains.

9th. Before every operation let the operator and his assistants cleanse and disinfect their hands as if they felt sure that septic material attached to them.

10th. Avoid even trivial operations, unless good reason for doing otherwise exist, for a few days before and after menstruation.

That a strict observance of all these precautionary rules will uniformly prevent the development of lymphangitis, septicæmia, and peritonitis, I neither believe nor maintain. That it will do a great deal towards diminishing the frequency of these accidents, I am entirely convinced by observation and experience. That they are of value I feel sure. That they are not essential is fully proved by the successful results, which we daily see around us, of operations practised with entire disregard of every one of them.

Even in ordinary examinations of the uterus the antiseptic idea should always be kept in mind. The plan which I follow, therefore, is this : Every day my office nurse pours boiling water upon all the instruments ordinarily employed, such as speculum, probe, sound, tenaculum, depressor, etc., washes them carefully with soap, and rubs them bright with a substance called electro-silicon. They are then kept immersed in carbolized water during examinations. After every examination the instruments used are again washed with soap, rapidly rubbed bright, and immersed in a fresh supply of carbolized water. After every examination the examiner's hands are carefully washed with soap in very warm water, the nail-brush freely used, and just before another examination they are rinsed in the carbolized water in which the instruments are brought in. The fingers and all instruments introduced either into the vagina or uterus are lubricated with carbolized vaseline, carbolic soap, or soft soap thoroughly carbolized. In these examinations absorbent cotton, held in a pair of dressing forceps

like those shown in Fig. 2, should be made to replace sponge, which is so much more likely to carry contagion from one patient to another.

FIG. 2.



Thomas's dressing forceps.

That patients are at times injured by want of proper hygienic precautions on the part of gynecologists, I feel assured by personal observation. That the contamination of women through their criminal ignorance or carelessness is not much more frequent, is a matter of unceasing amazement to me. Every gynecologist should feel two things very sincerely with reference to his daily system of examinations. 1st. That he would be willing to have his own female relatives exposed to all the risks of contagion to which he exposes his patients; and 2d. That he would at any time willingly submit his methods to the critical investigation of a jury of his peers as far as concerns cleanliness and hygiene.

After operations where it becomes necessary to have the bladder evacuated by the catheter, the precaution should always be observed of dipping the catheter in carbolized water and smearing it with carbolized oil or vaseline before its introduction. A neglect of this often results in prolonged vesical trouble which might readily have been avoided.

Vaginal Injections.—There is no agent in the treatment of diseases of the pelvic viscera which possesses greater value than this, and yet none which has been used from time immemorial in a more unsystematic and desultory manner. Until the appearance of Scanzoni's work, now over twenty years ago, very small amounts of fluid were used, not nearly enough to wash out the vaginal canal thoroughly, and the little piston syringe employed for the purpose, and holding only about an ounce, was utterly insufficient. Scanzoni taught us the important lesson that copious vaginal injections should always be employed where this method was resorted to, and gave us several very excellent plans for using them. This was an important step in advance. Since that time Emmet has done a great deal to systematize the matter, and introduced a method which I shall lay before the reader. His method is based upon the following deductions:—

1st. That no patient can use vaginal injections efficiently herself, but must have them administered by another.

2d. That for them to be effectual the patient must lie upon the back with the hips elevated.

3d. That a copious flow over the vaginal surface of water varying in temperature from 100° F. to 110° F. is most appropriate for all cases in which congestion exists.

4th. That cold water thus employed is hurtful by causing first vascular contraction and afterwards dilatation, while hot water produces first expansion and then contraction.

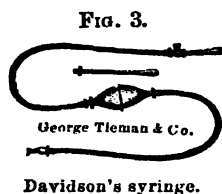
"The injection," says he, "can be better given to the patient after she is undressed for the night and in bed. She should be placed near the edge of the bed with the hips elevated as much as possible by the bedpan, and a small pillow under her back, the lower limbs being flexed. Her body must be covered, to protect her from cold, and her position made perfectly comfortable; whenever the bed is a soft one, for the purpose of keeping the hips elevated, a broad board should be placed under the pan to prevent it from sinking into the bed from the weight of the patient. The vessel of hot water is placed on a chair by the bedside, and the nurse passes the nozzle of the syringe into the vagina, over the perineum, directing it along the recto-vaginal wall until it has reached the posterior cul-de-sac. The water must be thrown in, at first, very carefully, until the vagina has become distended."

In hospital practice there is no method as good as this carried out in all its details, but in private practice every one must see the difficulties which will attend it. Dr. Emmet says, that "few women are so situated as to be unable to get some one to administer the injections properly." I should alter the sentence, making it read "few women are so situated as to be able;" for a lady does not like to call upon a servant to perform so delicate a task for her, nor is she willing either to impose it upon an equal or to bear the heavy expense of having a professional nurse visit her daily. Under these circumstances I employ the following plan. The patient places a pillow upon the edge of her bed and an empty tub upon the floor under it. She then covers the pillow by a piece of India-rubber cloth which drapes into the tub. Then, putting two chairs one on each side and a little in front of the tub, she places a small table in front of these, and upon this another chair. Upon the chair which stands on the table a tub containing about two gallons of hot water is now put, near the bottom of which has been inserted a spigot to which a long rubber tube is affixed, which ends in a vaginal nozzle. The patient now lies upon the bed, the pelvis elevated by the pillow, places her feet upon the chair, covers her limbs with a shawl or blanket, touches the spring, an ordinary clothes-pin makes a good one, which controls the flow, and the water bathes the vagina, and running out is conducted by the India-rubber cloth into the tub.

Here the only articles purchased are the tub with the spigot and tube attached, and a yard of India-rubber cloth, which are inexpensive. The patient will have everything else in her chamber, and very little trouble attaches to the method, which is certainly an efficient one.

While I admit the great value of Emmet's method, I do not by any means admit his postulate that "not the slightest advantage is received from them (vaginal injections) when administered with the patient in the upright

posture, or, as is the usual method, while seated over a bidet." Thus administered they are less effectual than in the method described, but still they do a great deal of good. While a patient is travelling, or in cases where injections are required only for cleanliness, they may be relied upon to do very good work, and I, therefore, describe the method of employing them. Placing in a tub from one to two gallons of water, at as high a temperature as proves comfortable to the patient, she may sit over it upon

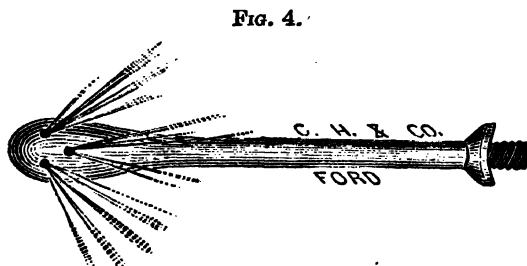


a board placed across it, or upon a stool placed in it, and inject the water by means of a syringe. The most convenient syringes for the purpose are the Essex and Davidson's. Both of these are provided with a stem about five inches long, which being introduced into the vagina and carried up so as to touch the cervix, throws, when the ball of the instrument is compressed by the disengaged hand of the

patient, a steady stream against it. By this means a stream of warm water is made to pour over the cervix for from twenty to thirty minutes, according to the amount of fatigue which the use of the instrument causes the patient.

Warm water is the best, as it is the simplest, most attainable, and cleanest of all the emollients which can be used for this purpose. But it may easily be medicated by the addition of laudanum, half an ounce to the gallon; infusions of linseed, poppies, hops, bran, slippery elm, starch, hyoseyamus, conium, or farina; or by the addition of glycerine, one ounce to the gallon, lime-water or tar-water, both of which last are often very soothing to vaginitis that may exist as a complication.

A few words are essential in reference to the nozzle which should be used in giving these injections. No amount of care will prevent the in-



Vaginal syringe nozzle, with reverse current.

jection of fluid into the uterine cavity unless the nozzle be properly constructed. Sometimes where the cervix is lacerated or the cervical canal dilated the patient will carry the instrument directly into the os externum and project a large amount of fluid into the uterus. Such an accident is followed by violent uterine contraction, and the probable passage of a por-

tion of the liquid into and perhaps through the Fallopian tubes, and this often results in a degree of pain which almost causes collapse, and sometimes even in pelvic peritonitis. This accident can always be prevented by having the nozzle of the syringe made with a reverse current as represented in the diagram. I have for many years employed those made of hard rubber, and it seems to me that in view of the fact that serious accidents sometimes follow the use of nozzles with direct jet, the precaution of reversing the current should always be observed by instrument makers.

The Tampon.—Had Sims's method of uterine examination done nothing else than lead to the proper method of using the vaginal tampon, it would have done by that alone a vast deal of good. Before its introduction the use of the tampon was a painful, uncertain, and inefficient hemostatic method. Since the use of Sims's speculum it has become an easy, painless, scientific, and most effectual method for preventing and checking hemorrhage from the non-pregnant uterus. The operator in gynecology who does not understand the modern method of tamponing the vagina, and who still relies upon the introduction by the fingers of a "kite-tail tampon," a silk handkerchief, pieces of cotton, or this combined with sponge, etc., surely does great injustice, both to his patient and himself, and courts hemorrhage—an evil which might easily be avoided.

In speaking of the vaginal tampon a recent writer¹ says: "It is a barbarous, slovenly, unscientific proceeding, and is generally based upon incompetence and instigated by terror. If hemorrhage be issuing from a closed os, it may be plugged with a sponge tent, in order that the source may be afterward reached. But if the cause of the hemorrhage be known and be irremovable, the treatment should be to inject the uterus with acetic acid, or even with some salt of iron, though the latter is a proceeding accompanied by terrible risks." I quote this to say how entirely I dissent from it. The tampon properly applied is not only a simple, cleanly, and painless procedure; it is safer, more efficient, and more scientific than the alternatives here suggested.

The patient being placed upon a table upon the left side, Sims's speculum is introduced and held by an assistant, while with sponges or rolls of cotton the surgeon removes from the vagina all mucus and blood clots which may exist there. Upon a plate near him have been placed a number of thick disks of carbolyzed cotton, some soaked in solution of persulphate of iron one-third to water two-thirds, or in a saturated solution of alum or copper, and others simply saturated with water. All superfluous fluid has been squeezed out by pressing these disks between cloths. Taking up in the dressing forceps one of the disks which has been saturated with an astringent, the surgeon packs this behind the neck of the uterus, then alongside of this he places another, holding the first one well

¹ Lawson Tait, *Diseases of Women*, 1877.

in place, meantime, by a rod of whalebone, or other similar substance, until the second is placed. In this way piece after piece is packed away until a collar is placed around the neck of the uterus which extends to a level with the os externum. Then this part is covered with more astringent cotton, which is packed into place and held there by pressure from a rod, and simply wet cotton is packed upon it until the vagina has been filled to within an inch of the vulva, when a piece of soft dry cotton is made to hold the more efficient upper tampon in position. The lower portion is now carefully pushed away from the urethra, and, a dry soft towel being laid over the vulva, a T bandage is applied.

Such a tampon is a safe hemostatic agent. After operations upon vagina, vulva, or cervix, it proves a most certain preventive of hemorrhage. As a means for checking hemorrhage, already fully established, it has no equal in value in gynecological surgery.

When it is necessary to remove this tampon, which may be left in position for twenty-four or even thirty-six hours, two methods present themselves. First, the speculum may be gradually introduced, and each piece of cotton as it becomes visible be caught by a tenaculum and pulled out until the last piece is removed. Second, the position of the patient being unaltered, one finger is passed up until the cotton is touched; then the screw, represented in Fig. 5, is slipped along it, and by a few turns imbedded in the mass. Traction is then made and a portion of the tampon

FIG. 5.



Sims's screw for removing a tampon.

is removed. After this another piece is caught and drawn away until the vagina is emptied. In cases in which it is desirable not to move the patient for fear of fatiguing her, and where no second tampon is to be applied, this ingenious instrument answers an excellent purpose.

Means for controlling the temperature after operations, and during pathological conditions developing in gynecology.

The most careful observation and a large clinical experience have led me to the conclusion that one of the most momentous problems in therapeutics consists in keeping the animal heat within proper bounds. In my opinion one of the most important impressions which should gain firm foothold in the mind of every practitioner is this: *Prolonged high temperature kills.* In many diseases, such, for example, as septicæmia, typhus and typhoid fever, peritonitis, sunstroke, scarlet fever, etc., it is commonly the chief and most immediate factor by which a fatal issue is produced; in many others it is a prominent, though not the chief, agent which exhausts the vital forces; while in others still, such as chronic brain

diseases, dysentery, cancer, chronic cardiac diseases, etc., it is no factor at all.

If for a week a very high temperature has been allowed to continue in any case, death will very likely result from this continuance at a later period of the disorder, even if at the end of that time it be lowered and kept within proper bounds. The vitality of the blood has been impaired; the muscular and nerve tissues supplied by the depreciated fluid are altered, and the structure of important organs changed in character; and these unfortunate occurrences lead on to death. In a lengthy case of typhoid fever the temperature being allowed to remain for three or four weeks at or near 104° , it becomes lower by the self-limitation of the disease. At that time pneumonia or some other complication develops, and the patient dies. Under these circumstances death is regarded as having been due to an unavoidable complication; but, if the blood state had not been steadily depreciated by the antecedent month of high temperature, the complication would very likely not have occurred.

A child passes through the first eight or ten days of scarlet fever with a temperature at or near 105° , and then succumbs to cerebral exhaustion, secondary meningitis, or pneumonia. Had the pathological conditions created by ten days of a temperature of 105° not been allowed to occur, these secondary manifestations might have been avoided. To elicit all the beneficent results which control of temperature can produce, such control must be exercised: (a) throughout the course of the disease from its beginning to its end; (b) by means which do not disorder digestion, or exhaust the strength; (c) by means which are certain, systematic, and always attainable.

These remarks apply to the whole field of medicine, but in no department of it have they greater force than in that which especially engages our attention. The diseases which the gynecologist most dreads, to which the largest number of his patients succumb, and consequently with which in his daily labors he has most frequently to cope are two, which destroy life in great degree by exhausting the vital forces by high temperature—peritonitis and septicæmia. Give him control over these and the most melancholy part of his daily functions would be obliterated! Arm him with the means of closing the broadest gateway through which the fatal issues of these affections may enter, and the consummation so devoutly to be wished is more nearly to be attained than it could be in any other way.

The day is, I think, not far distant when it will become a cardinal rule in the treatment of every disease to maintain throughout its course the temperature at or under 100° . In my own practice that day has already arrived. As I have already said, observation and experience have fixed the fact which I am here upholding in my mind as one of the most important in the whole field of therapeutics. I am as thoroughly convinced

of its truth, and I as sincerely believe in it as I do in the efficacy of the cinchona salts in malarial diseases.

Its value was clearly pointed out years ago by Curry of England, and some may regard it as an evidence adverse to its claims that it was soon obliterated from the professional mind. This objection, weak in itself, is annihilated by the fact that Curry, at the same time and with a like futility of result, urged the claims of the greatest medical discovery of the last century, one which, from the standpoint of utility to medicine and through it to humanity, equals in importance vaccination and anæsthesia—clinical thermometry.

As the method for accomplishing control of temperature is fully described under the head of ovariectomy, I shall not allude further to it here, but refer the reader there.

CHAPTER V.

DIAGNOSIS OF THE DISEASES OF THE FEMALE GENITAL ORGANS.

THE diagnosis of the diseases of the pelvic viscera of the female offers many obscurities, and frequently foils the most careful and capable practitioners. With the utmost caution, assisted by the most practised skill, no one can avoid occasional errors, while in the experience of those not possessing these qualifications, they must be frequent and glaring. The only safeguard which can be established against their occurrence, and the only guarantee which can be obtained for success in prognosis and treatment, is the thorough mastery of the subject which is now to engage us.

It is not rare for one making a special study of gynecology to find those less familiar with it committing errors of diagnosis, or, what is more common, arriving at no conclusion, in cases which are perfectly simple and present no obscurities whatever. When meeting such instances in the practices of intelligent men, I have been struck by the fact that the source of difficulty is almost always the same. The failure of diagnosis has not been due to their having drawn incorrect conclusions from diagnostic means, but to their not having brought these means fully into action, and properly applied them to the solution of the case in hand. In many instances, uterine disease being suspected, the physician employs vaginal touch, and follows it by the speculum. If the os and cervix be diseased, he is successful in diagnosis; but if not, he becomes discouraged, forgetful of the fact that rectal touch, the uterine probe, dilatation by tents, conjoined manipulation, and other means should be resorted to, and that, without appealing to these, even the most skilful diagnostician would be

as helpless as himself. There are means at our command for exploring every tissue within the pelvis—the uterus, the ovaries, the areolar tissue, etc.; and until they are brought into service carefully, systematically, and thoroughly, no one can feel that he has done justice to his powers of diagnosis, or allowed himself full opportunity for drawing correct conclusions. Skill in diagnosis must be obtained at the bedside, but for that school to be made profitable, the student must have a thorough familiarity with the theory of the means of investigation which he is there to apply. Having mastered these, let him in an obscure case develop them one after the other, slowly, carefully, and thoughtfully, until he has arrived at a diagnosis, or at the fact that he is unable to make one even after having availed himself of all the resources at his command.

Let me illustrate this by a supposititious case. An inexperienced examiner discovers upon vaginal touch that the vagina is occupied by a large tumor. If he rest satisfied with this method of exploration, and without reflection adopt the idea that the case is one of fibrous polypus, he may commit a grave error. The most skilful of gynecologists could not decide by touch alone, and would be, almost as much as he, exposed to error if he relied upon it. All the means which the experienced diagnostician can bring to his aid are likewise at the service of the inexperienced; and if the former stand in need of their assistance, surely the latter much more decidedly requires it. Let him then ask himself this question, although he may feel absolutely positive, altogether certain, that he is dealing with a fibrous polypus: what else may this be? At once the answer will come, it may be a case of prolapsed uterus, or of inversion of the uterus. It is important that he should know which it is, and usually it is quite easy to decide.

Drawing down the tumor, he examines by inspection and touch, and seeks the os externum, up which to pass the sound. It is not anywhere to be found, and moreover the tumor is larger below than it is above. The case is not one of prolapsus, and he feels that his diagnosis of polypus is surely correct. If it be a polypus which occupies the vagina, the uterus should be above it. He now practises conjoined manipulation, but to his surprise this organ is nowhere to be felt. This may be due to his want of experience, and he examines further with the sound, endeavoring to pass it alongside of the neck of the tumor, and into the uterine cavity. He is surprised again, to find that it is arrested at the neck of the tumor, around which he now passes his finger, and finds it closed everywhere by a gutter of circular character existing about an inch above the lips of the dilated os. The case now looks like one of inversion, but he is not sure, for sometimes adhesive inflammation attaches the walls of the cervix to the neck of the polypus. Are there any means by which he may settle this question positively? By conjoined manipulation he thinks that he

feels a ring or circle over the abdominal face of the tumor, and gradually he pushes his fingers into it, and becomes positive of its existence.

Now placing the patient upon the back he passes one finger into the rectum and a sound into the bladder and approximates them above the tumor. He finds no uterus intervening, and his diagnosis is made; the case is one of inversion of the uterus. This is his diagnosis, that is, his deduction carefully and philosophically drawn from the premises presented to him, by the best means at his disposal. Let him resort to all these means, and success will usually be his. But, it may be suggested, he is not as familiar with these means as a more experienced man is. Practically, I agree that he is not; but why is he not theoretically? Are they not recorded and fully explained in all his works on gynecology? What is demanded of him is not experience, not wisdom; but a faithful and earnest effort to arrive at the truth by simply employing means which science places at his disposal.

These remarks of course apply with equal force to every condition in which a diagnosis is required. Let it be a constant habit to demand of one's self, after admitting a suspicion as to the nature of the disease, what else could present the physical appearances which exist? Having carefully considered this, let the various means of differentiation at command be fully tested. Then if an error of diagnosis creep in to damage interests entrusted to his charge, the mortified diagnostician may console himself with the reflection that at least he has exerted himself to the utmost of his ability to avoid it, and not fallen into a trap set for him by carelessness, indolence, or incompetency.

It must not be forgotten, however, that certain rare and exceptional cases will occasionally occur, the diagnosis of which will baffle the skill and experience of the most cautious and conscientious. Take, for example, the following:¹ a patient aged sixty-two years had a movable abdominal tumor which was examined by a number of physicians. She died suddenly, and autopsy revealed extra-uterine pregnancy, a child weighing four and a half pounds lying loose in the peritoneal cavity. Or this:² a tumor is discovered in the pelvis; the patient dies from some cause disconnected with it, and it is found to be a displaced kidney. But such cases are rare. The careful and intelligent diagnostician will very generally be successful.

Rational Signs.

In the examination of a patient suspected of having uterine disorder no direct or suggestive questions should be asked, but the symptoms should be drawn forth by encouraging and properly directing her narrative of her case. Certain signs, which we call "rational," from their appealing to

¹ N. Y. Med. Record, Feb. 1st, 1872, p. 539.

² Braithwaite's Retrospect, part 37.

Present condition as regards

Menstruation,	{	Regularity.....
		Amount.....
		Pain.....
Leucorrhœa,	{	Character.....
		Amount.....
		Constancy.....
Pain,	{	Locality.....
		Degree.....
Locomotion.....		
Other symptoms.....		
Physical signs,	{	By touch.....
		By speculum.....
		By probe.....
Diagnosis.....		
Treatment.....		

It will be observed that I have not enumerated the various rational signs generally attendant upon uterine affections, but merely the means for drawing them forth. Their special mention will be reserved for the study of particular affections. If the evidence elicited leaves any of the pelvic viscera under suspicion, this is verified or removed by means which are more positive and reliable from the fact that they address our senses.

It will further be seen that the headings of my table are not numerous, nor the table itself lengthy or exhaustive. My belief is that the chief reason why such tables are not more generally employed is that they are so long and so filled with non-essential items as to become tedious and impracticable. This table is that which I employ in daily practice. I find that when filled out it gives all the salient points in my cases, and these are all that I desire ordinarily to preserve.

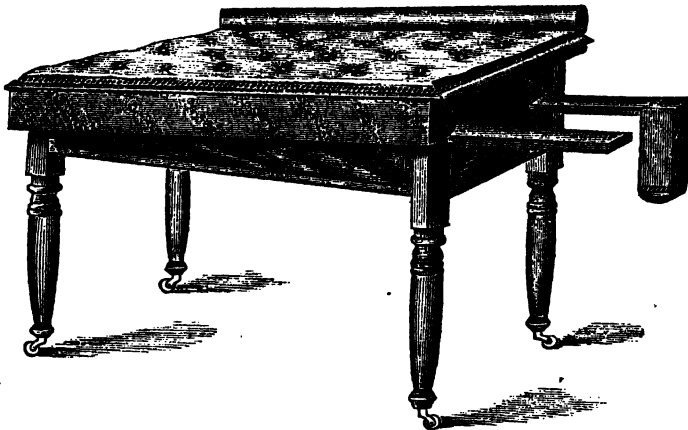
MANAGEMENT OF PATIENT DURING PHYSICAL EXAMINATION.—Before commencing the consideration of physical signs, I shall make a few remarks upon a subject of great importance in this connection, namely, the management of the patient during the examination. As Dr. Sims has taught us, she should never, unless it be impossible to do otherwise, be examined upon a bed or sofa, but upon a table covered with a blanket, shawl, or rug of some kind, and provided with a small pillow. The facility thus given for thorough investigation is very great, and the avoidance of the sinking of the body into the soft bed repays most fully the extra trouble which it causes to make the change. It may be said that many ladies will strongly object to the exposure incident to getting upon a table. This is not so; a little persuasion will overcome such objections at once, and the increased exposure is in reality imaginary, for the table is to all intents a bed, and a sheet for covering the person gives all desirable pro-

tection. Should it be necessary to employ a bed, the leaf of a dining-table or a wide board should be slipped across the mattress under the upper sheet and covering, and a hard surface will thus be presented for the patient to lie upon, which will obviate, in great degree, the objections to the bed otherwise arranged.

The patient should always lie upon her back in a first examination, with the clothing loose around the waist, the knees drawn up, and the abdominal walls relaxed. A sheet should be spread over her so as to conceal the entire person. The table having been previously turned to a window admitting a strong light, a chair should be placed at its foot for the examiner, and at the right side of it another, upon which has been arranged a basin of warm water, soap, and a towel.

A variety of tables for these examinations in the physician's office are now before the profession. I here present that which I employ both in office and hospital practice. For the cylindrical speculum it presents the advantages of an ordinary table; for Sims's speculum, a great many more.

FIG. 6.

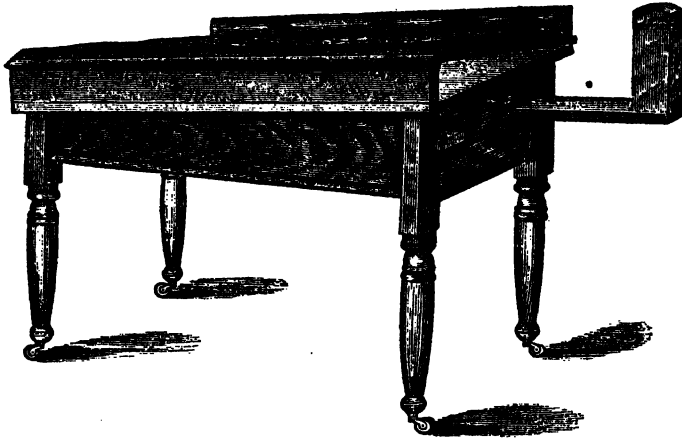


Thomas's gynecological table.

Fig. 6 represents the table prepared for an examination on the back; a pillow supports the head, the buttocks are slightly elevated, and the feet rest upon the projecting pieces. When this examination is completed, the patient stands upon the chair or stool recently occupied by the examiner, and the table is changed for examination with the speculum in Sims's position, as shown in Fig. 7. The top of the table is now elevated at one side so that it slants decidedly to the other. The ankles of the patient, resting one upon the other, are supported by the projecting pad upon the end of the foot-piece. The other foot-piece has now been pushed into the body of the table. This position, by gravitation, throws forwards the viscera,

and thus aids in rendering the action of Sims's speculum more perfect. It will be observed that the slanting surface of the table is now supported by the hinged piece which in Fig. 6 lies as a flap along the side of the table, but in Fig. 7 is turned up.

FIG. 7.



Thomas's gynecological table.

Means of Physical Diagnosis.

I shall enumerate and consider these in the order in which they will generally be employed in a case requiring the aid of all of them for its elucidation:—

1. Anæsthesia.
2. Vaginal touch.
3. Conjoined manipulation.
4. Abdominal palpation.
5. Abdominal palpation conjoined with use of the sound.
6. Inspection.
7. Rectal touch.
8. Vesico-rectal exploration.
9. The speculum.
10. The uterine probe and sound.
11. The elastic sound.
12. Tents.
13. The wire loop.
14. The exploring needle.
15. The aspirator.
16. The microscope.
17. Auscultation and Percussion.

ANÆSTHESIA.—This should not be resorted to unless there be some special indication for it. Should the patient be intractable, delirious, or a malingerer; should the investigation involve much severe pain; or should there be some tonic spasm of the muscles as an element of the disease, as is the case in spurious pregnancy and phantom tumors, it affords an aid to diagnosis of great value, and should never be neglected. When we are forced to examine a virgin who is very sensitive, and opposed to the investigation, it is sometimes advisable, for without it a diagnosis is frequently impracticable. One even of large experience is often greatly surprised by the results of two consecutive examinations, the one without and the other with anæsthesia. The second not only corrects the shortcomings of the first, but throws a flood of light where obscurity existed before.

VAGINAL TOUCH.—This, which will be the first explorative measure to which the examiner will resort, constitutes one of the most important at his command. It will reveal much or little, as it is practised slowly and thoughtfully, or hastily and as a matter of routine. In making it the index finger of either hand may be employed, and when it is desirable to reach as far up the pelvis as possible, the index and middle fingers may be used. During this examination the patient should invariably be laid upon the back, with the legs flexed and the buttocks very near the edge of the table. The observance of this position is of great importance, as vaginal touch should in every case be combined with abdominal palpation, to which union the name of conjoined manipulation or bimanual palpation has been applied.

The index finger of one hand, being introduced into the vagina, the other fingers being flexed into the palm and the thumb laid upon them, passes directly to the cervix uteri, assuring the investigator, as it goes, of the perviousness of the vaginal canal. Upon reaching the os, this part is carefully examined with reference to size, consistency of lips, and character of discharge; a patulous os, with soft, velvety sides covered by a glutinous secretion, admonishing him of the existence of inflammation of the os and cervical canal. The cervix should then be examined with reference to location, size, and density. This being done, the finger should be slid along its posterior surface into the recto-uterine space, and the presence of any hardness or tumefaction there be noted. Should such be found, it will probably be due to one of these causes. retroflexion or retroversion of the uterus, uterine enlargement, a fibrous tumor, scybalæ in the rectum, inflammatory products, the result of peri-uterine cellulitis or peritonitis, a prolapsed ovary or ovarian tumor, or an hematocoele. Should no tumor be discovered, but the line of resistance given to the finger be found to disappear at the vaginal junction with the uterus, it may be inferred

with moderate certainty that at this point none of the above mentioned conditions exist.

This space being explored, the finger should then be passed anteriorly, and swept upward and forward along the base of the bladder toward the symphysis pubis. Any hardness discovered here will probably be due to anteflexion or anteversion of the uterus, a fibrous tumor, stone in the bladder, uterine enlargement, or possibly cellulitis.

The state of the ovaries should then be tested by lateral pressure, and the condition of the pelvic areolar tissue and walls by firm pressure in all directions.

In certain rare and obscure cases, such, for example, as those in which a diagnosis of large tumors in the vagina is very difficult, it becomes necessary to introduce the whole hand into the vagina. This procedure, which should be resorted to while the patient is anesthetized, must be practised with the greatest caution. Otherwise injury may be done to the parts about the vulva, and a large and carelessly managed hand may produce rupture of the vagina.

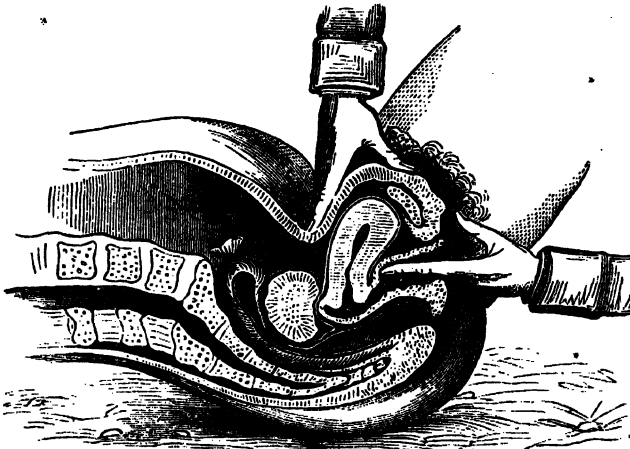
One manœuvre, by which touch of the parts lying closely in contact with Douglas's cul-de-sac is much facilitated, still remains to be mentioned. Where small tumors exist behind and disconnected with the uterus, or where enlarged and prolapsed ovaries are to be sought for and examined, an excellent result is often obtained by placing the patient in Sims's left lateral position, and passing the index and middle fingers of the right hand as high up as possible, their palmar surfaces looking towards the posterior wall of the vagina. By this method I have repeatedly detected enlarged and slightly displaced ovaries which in the dorsal decubitus had entirely escaped observation.

CONJOINED MANIPULATION, OR BIMANUAL PALPATION.—As the preceding examination consists in touching organs above the pelvic roof for the most part, and which are generally quite movable, it is evident that its results are diminished by ascent of these parts as they are pressed upon. To bring them more fully within the reach of the finger in the vagina, and to prevent their retreat, abdominal palpation should invariably be combined with vaginal touch. While the latter is being performed by the index finger of one hand, the other hand should be placed on the abdomen, and by it the uterus be made to descend, so that even its upper parts may become accessible. This will enable the examiner to sweep the finger in the vagina over the posterior, anterior, and lateral surfaces of the organ, and detect the presence of any enlargement, sensitiveness, or abnormal growth there. Fig. 8 represents this.

But not only should the walls of the uterus be thus explored: the volume, shape, sensitiveness, and regularity of surface of this organ, as well as of the ovaries, the broad ligaments, anterior vaginal wall, and bladder,

should likewise be ascertained. To accomplish this with reference to the uterus, let the finger in the vagina be placed under it—*anterior to the cervix* if it be in normal position or *anteflexed*, *posterior to it* if it be *retroflexed*—and the organ will be distinctly felt resting between it and the fingers which depress the abdominal wall. By the same method the other parts mentioned should be examined. Conjoined manipulation is of great

FIG. 8.



Practice of conjoined manipulation. (Sims.)

importance; indeed no examination can be considered complete without it. By a neglect of this seemingly trifling precaution I have known the existence of large tumors, and even of pregnancy quite advanced, entirely ignored. Some time ago a physician sent to me from a distance a case which he supposed to be one of prolapsus uteri, from the fact that the uterus was low in the pelvis, never suspecting for a moment the existence of two fibrous tumors, each the size of a foetal head, which depressed the displaced organ.

Were I called upon to mention the most important method of diagnosis at the disposal of the gynecologist, not excepting the speculum and sound, or even the two of them together, I should unhesitatingly select conjoined manipulation. It is less generally known, and much less generally appreciated than it deserves to be.

Not only may this method be practised by combination of vaginal touch with abdominal palpation: it may likewise consist of the combination of the latter with rectal touch, by one finger, or by the introduction of the hand after Simon's method.

ABDOMINAL PALPATION.—The practice of bimanual palpation will have assured the investigator of the presence of any tumors which may

exist in the pelvis. Should such have been discovered, a further examination will, of course, at once be entered upon to ascertain their size, shape, attachments, and contents. In this exploration both hands are employed externally; and by them firm pressure is made and the abdominal walls depressed, so that by grasping the masses their characters may be appreciated. By this means the diagnostician decides as to the solidity or fluidity of tumors, their sensitiveness to pressure, the presence of foetal movements, and other points of equal importance.

ABDOMINAL PALPATION CONJOINED WITH THE USE OF THE SOUND.—

I shall very soon speak of the uterine sound in relation to its ordinary and more legitimate functions. Here I allude to it only as a means of rotating the uterus in the pelvis in order that the hand pressed upon the abdomen may separate it from enlargements in the abdomen. This method of investigation is of so great value, and appears to me so little appreciated and so rarely practised, that I wish to draw especial attention to it. Let us suppose that a tumor occupies the pelvis or lower portion of the abdomen, and it be desired to determine how close a relation exists between it and the uterus. The sound being passed to the fundus, the patient lying upon the back, it is made to rotate the uterus. The left hand, which is unoccupied, is now placed on the abdomen, so as to become cognizant of movements in the uterus and tumor. If both move equally, their connection is intimate; if the uterus move freely and the tumor but little, it is less marked; while if the tumor remains stationary during rotation of the uterus, there is probably no connection, or one only by lengthy bonds of union.

Again, in cases where palpation and conjoined manipulation fail to map out the position of the uterus on account of obscure pelvic tumors or great obesity of the woman, lifting the organ by the sound and rotating it under the palm laid upon the abdomen, is a valuable resource.

Lastly, in cases of supposed fibrous polypus where one fears to operate lest an inverted uterus may have misled him, although the passage of the sound alone makes him almost sure as to diagnosis, it gives confidence to feel the uterine body rolling under the hand laid over the abdomen, for it is not an unheard of occurrence for the sound to pass through the uterine walls and enter the peritoneum.

I would urge this procedure, as a rule, in the examination of abdominal and pelvic tumors. Indeed, in a large number of such cases, a neglect of it will allow of errors in diagnosis, which, by its adoption, might have been avoided.

INSPECTION.—A great deal may be learned from the inspection of diseased growths about the vulva, or ostium vaginæ, and of tumors in the vagina, which may be drawn down between the labia, and valuable information may be gained concerning abdominal enlargements by this means.

For example, the shape of an ovarian cyst is globular and protuberant, while that of an abdomen affected by ascites is flat and bulging at the sides; the form of a mono-cyst is usually globular, while that of a poly-cyst is commonly irregular; the development of a pregnant uterus is regular and symmetrical; that of a solid tumor of the uterus often irregular and unsymmetrical.

RECTAL TOUCH.—Should anything have been discovered upon either uterine wall to make further light upon the state of these parts desirable, or should symptoms have presented themselves which excite suspicion of the presence of some morbid growth, the index finger of one hand should be carried far up into the rectum, and, if necessary to enable it to reach the posterior uterine wall, a tenaculum should be fixed in the cervix, and by gentle traction the organ drawn down. Generally, however, sufficient depression will be accomplished by firm pressure over the hypogastrium with the other hand, the tips of the fingers pressing the uterus towards the floor of the pelvis; or both of these means may be combined by bringing to our aid the hand of an assistant. Those who have not employed this method systematically must have a faint idea of the great facility which it gives for exploration of the lower portion of the posterior wall and recto-uterine space.

Prof. Simon, of Heidelberg, some years ago greatly modified the method of exploring the pelvic viscera of the female through the rectum. His method is thus put into practice:—

1st. The patient is anæsthetized and placed in an exaggerated lithotomy position; the knees being thrown upwards so as to flex the thighs sharply.

2d. The sphincter ani is thoroughly stretched, and first the fingers and then the hand cautiously introduced. In certain very rare cases an incision, involving the sphincter, is made through the posterior raphe of the anus. For diagnostic purposes this is very seldom required.

3d. The fingers are then separated and a careful examination of the pelvic organs is made.

4th. Should it be found necessary to invade the parts above the level of the sacrum, three or four fingers are introduced into the sigmoid flexure, so that we may “reach above the umbilicus without in the least injuring the intestines or peritoneum, and, the upper portion of the rectum and sigmoid flexure being extremely movable, can palpate the whole abdomen as far as the lower edge of the kidney.”

It was asserted that by this means a positive diagnosis could be made of many diseased states of the uterus, ovaries, rectum, and sometimes even of the kidneys; that by it the examiner is enabled to hold the ovaries between the thumb and finger and appreciate their size, consistence, and smoothness; to discover tumors of the uterus no larger than a cherry; to

ascertain the length of the pedicle of an ovarian cyst, and the freedom from attachments of the cyst itself; and in a case of renal cyst to learn that the tumor has no connection with the pelvic organs.

Such is Simon's method of rectal exploration. In an edition of this work published six years ago, I advocated it, basing my views chiefly upon the assertions of its originator, and to a limited extent upon personal experience. To-day with fuller experience I maintain that, except in a very few rare cases, it should be expunged from the list of explorative measures in gynecology. That in certain exceptional cases it may have to be resorted to, I do not deny; but even in these it should be employed with the greatest caution, and be regarded in the light of a serious operative procedure. It is attended by too great danger of laceration of the wall of the intestine, and cramps the hand so as to give too little explorative power in proportion to the risk run to warrant a frequent resort to it.

Several cases are now on record in which its employment in the hands of careful and skilful practitioners has terminated fatally. The danger is greatly increased where several examiners succeed each other in exploration. The earlier examinations stretch and weaken the tissues, and the later lacerate them. For this reason it should be made a rule that only one exploration should be made, and that that should last only a short time.

A great deal more can be accomplished by the introduction of the hand except the thumb, after stretching the sphincter ani, than by the old method of introducing only one or two fingers.

Should any substance lie in the recto-vaginal space, its character may be accurately appreciated by what has been styled, by Dr. Tilt, the "double touch," which consists in introducing the index finger into the rectum and the thumb into the vagina, and then approximating them. Or the index of one hand may be introduced into the vagina and that of the other into the rectum.

VESICO-RECTAL EXPLORATION.—This consists ordinarily in passing a catheter or sound into the bladder, and pressing it towards the index finger in the rectum. Its scope is not extensive, but for some purposes no other method answers the same end, as, for example, for the following:—

Appreciating the size of the uterus in very fat women;

Detecting absence of the uterus;

Differentiating inversion from polypus.

The only difference between this method and conjoined manipulation consists in the attempt to grasp the uterus between the finger and sound instead of between the fingers of the two hands. Who the originator of this ingenious method is I cannot say. By Mr. C. F. Weiss it is attributed to Malgaigne.

This method may be practised in still another manner; that proposed by Noeggerath. It consists in dilatation of the urethra by graduated dilators, the introduction of the index finger of one hand into the bladder and that of the other into the rectum or vagina, and the approximation of these so that the uterine walls, anterior, posterior, and lateral, can be carefully and thoroughly examined. This method, like that of Simon, should be resorted to only in obscure and difficult cases not susceptible of elucidation by other means.

THE SPECULUM.—This is by no means our most valuable diagnostic resource. Too great a reliance upon it as such is calculated to diminish the physician's powers for arriving at a correct conclusion in obscure cases. Unquestionably the greatest benefits derived from the speculum demonstrate themselves in the therapeutic department of this subject. As a diagnostic means it is inferior to vaginal and rectal touch combined with abdominal palpation, and chiefly aids us in this field by opening the way to the proper use of the uterine probe, which constitutes one of the most reliable methods at our command for appreciating the condition of the cavity of the uterus. Let any one who is surprised at the statement, which many will be, reflect as to what can really be seen even in aggravated cases of disease, except malignant, granular, and cystic degeneration of the cervix. The position of the uterus, the presence of a foreign body in its cavity, the condition of its surrounding tissues can none of them be learned from the sense of sight.

All vaginal specula may be classified under two heads, cylindrical and valvular. Of the first variety cylinders of metal, porcelain, ivory, and wood are in general use. None of these compare in elegance, cleanliness, and utility with that of Dr. Fergusson, of London, which consists of a tube of glass coated with quicksilver, and covered by India-rubber, which is thoroughly varnished. This instrument is represented in Fig. 9.

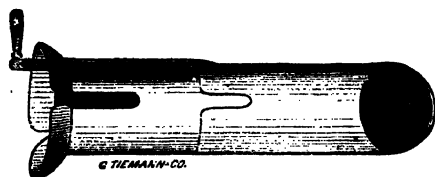
FIG. 9.



Fergusson's speculum.

Objections which attach to all cylindrical instruments are the following: to suit all cases they must be from five to six inches long, which renders probing the uterus through them impossible, and prevents applications from being carried to the fundus; it is not possible to examine through them

FIG. 10.

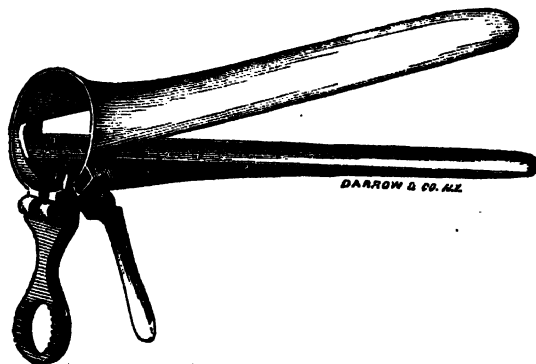


Thomas's telescopic speculum.

by touch; and in anteversion it is difficult to get the cervix into the field. The instrument represented in Fig. 10 obviates many of these difficulties by accommodating itself to the length of every vagina, so that the shoulders come just between the labia.

It consists of two thin metallic tubes, one of which slides within the other. To the inner tube are attached, at the mouth, wings which sustain the labia, and the outer tube ends in a tip which is either straight or curved. It is called the "telescopic speculum," from its mechanism, and measures, when not extended, along its shorter side two and a half inches, along the opposite, three. When extended, it is as long as the ordinary cylindrical specula. On both surfaces, upper and lower, are two fenestræ, which admit of elevating or depressing the probe in cases where flexion or version exists, and its handle must be much lowered. A downward curve may with advantage be given to the longer lip. This curve looks at first both odd and useless; but upon experiment it will be found to answer a very useful purpose. In cases where the uterus is normal in position it will not depress the cervix too much, while by turning it up when this part lies imbedded in the hollow of the sacrum the examiner will be enabled to lift it and engage

FIG. 11.



Cusco's speculum.

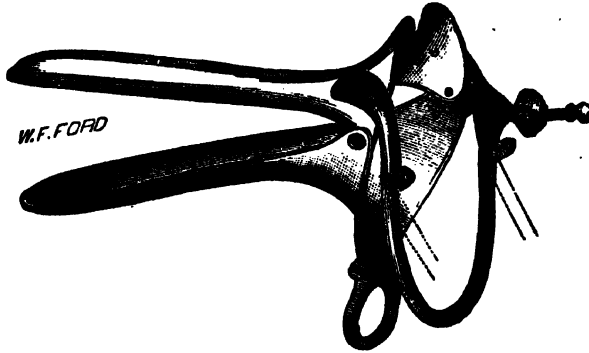
it in the field of the speculum. When fully introduced the wings at the mouth of the instrument support the labia, and thus no superfluous portion extends beyond the vulva.

Of valvular specula the bivalve of Ricord, the trivalve of Ségalas, and the quadrivalve of Charrière have long been popular. No instrument of

this variety with which I am acquainted equals that of M. Cusco, Fig. 11. It is compact; easily introduced, and shows the cervix very clearly.

A great many modifications of Cusco's speculum are now in use. Indeed so great is the variety of modifications of this and of Sims's instru-

FIG. 12.

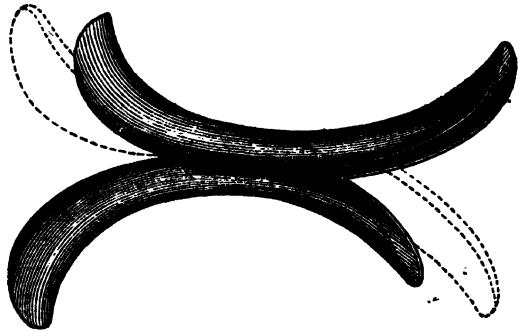


Howard's modification of Cusco's speculum.

ment that the speculum seems destined to vie with the obstetric forceps in the number of its variations. Fig. 12 represents Dr. Howard's modification of Cusco's speculum, a very good representative of its class.

Of all the specula thus far mentioned I have spoken from personal knowledge. The next I show upon faith alone. It is the speculum of Prof. Neugebauer, of Warsaw, which is so highly commended by some of the most eminent gynecologists of Great Britain that I bring it before the reader upon their authority. The diagram here exhibited shows this instrument somewhat modified by Dr. Barnes, of London, and as presented by him before the London Obstetrical Society.

FIG. 13.



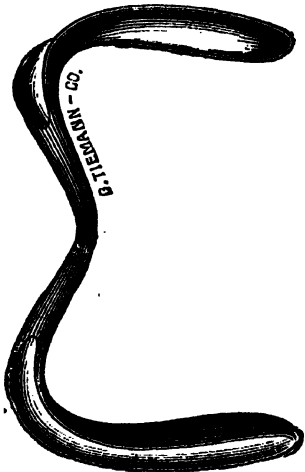
Neugebauer's speculum.

All valvular specula, however, present these great disadvantages. It is difficult to avoid prolapse of the vaginal wall between their branches, and in removing the instrument these are liable to be painfully pinched. If, upon introducing and expanding their branches, the os uteri is exposed, all goes well; but if it is not in the field, these instruments are awkward and unwieldy in overcoming the difficulty; indeed, in many cases, the speculum must be with-

drawn and reintroduced to accomplish the result. They have one great advantage over the cylindrical specula, namely, their introduction is attended by much less pain. Should the case be one of a multipara, a cylinder may be introduced without pain, but in a nullipara, or virgin, this is often caused.

Like the cylindrical, the valvular specula in general use do not as a rule admit of probing the uterus and making applications to the fundus.

Fig. 14.



Sims's speculum.

I do not deny that in some cases it is possible, nor that by perseverance a skilful operator may succeed in effecting these objects in many instances, but it is usually so difficult that the general practitioner will not find such specula available for these ends.

Fig. 15.



Sims's depressor.

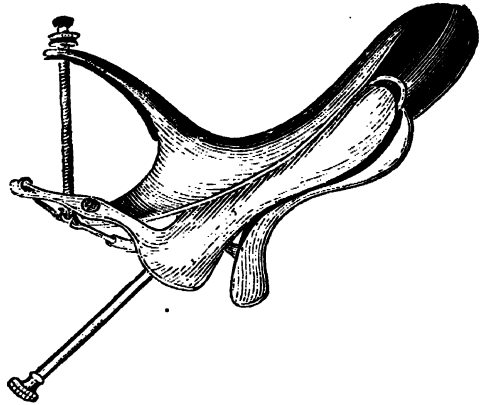
Sims's speculum, Fig. 14, which is in reality a bivalve, obviates all these difficulties in the most complete and satisfactory manner. In exposing the uterus it develops a principle not brought into action by any other variety, the dilatation of the vaginal canal by air, which enters on account of the position of the patient

and gravitation of the pelvic and abdominal viscera. I have stated that this instrument is a bivalve speculum; the upper valve is constituted by the blade of the speculum itself, and the lower by the depressor, represented in Fig. 15, which acts upon the anterior wall.

The facility which Sims's instrument gives for exploration and treatment is very great, so great, I think, that the practitioner devoting himself to gynecology who does not avail himself of it, loses as great an advantage as the auscultator would forego in not bringing to his aid the double stethoscope of Camman. But unfortunately this instrument presents such disadvantages that it can never come into general use. In the hands of those attending a sufficient number of cases of uterine disease to give them skill in manipulation and opportunity for thoroughly familiarizing themselves with it, it will always fill a large place, but in general practice it will not do so. It cannot be employed without an assistant, and not only so, a skilled assistant is necessary for it to be of real value. This fact has incited many to alter Dr. Sims's original model so as to combine its advantages in instruments free from the objections which have been mentioned. A few of these I lay before the reader.

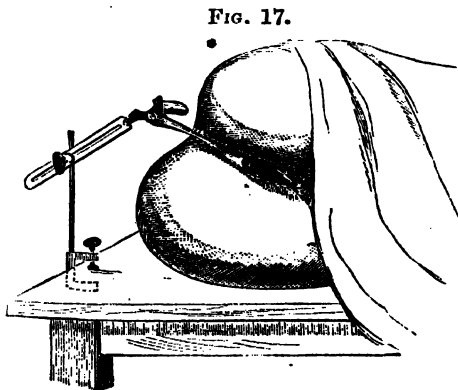
When the posterior vaginal wall is lifted by Sims's speculum, the anterior must be depressed by an instrument held in the other hand. Thus both hands are occupied, and the operator is bereft of power to proceed. The object of the alteration is to liberate one hand in order that the further steps of the examination may be proceeded with.

Dr. Nott's speculum (Fig. 16) does this by depressing the anterior vaginal wall by two short arms. These at the same time keep the blade of the speculum itself in place, and thus either one or both hands are free for making applications to the uterus, probing its cavity, or whatever else may be required.



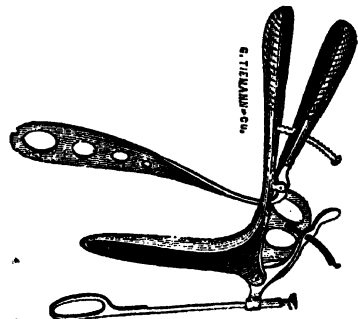
Nott's speculum, closed.

The speculum of Dr. J. B. Hunter (Fig. 17) is simply Sims's speculum, with its blades bent inwards so as to enable the examiner to fix it in a support which is attached to the table and acts as a mechanical assistant. The speculum being thus fixed keeps its position perfectly, and the examiner with both hands free, proceeds in his investigation, employing the depressor as when an assistant aids him. To make this arrangement effectual some practice is necessary, but with that it will prove an excellent one.



Hunter's speculum.

Fig. 18.



Thomas's modification of Sims's speculum

The instrument represented in Fig. 18 clasps the sacrum; one blade, *a*, the speculum itself, being placed within the vagina, and the other, on the outer surface of the sacrum. Their approximation by the left hand ele-

vates the posterior vaginal wall, and the handle is held by one hand. The anterior wall is then depressed by the depressor, and thus one hand is left free. This instrument appears complicated in a diagram, but in reality it is by no means so. For a long time I employed it without the sacral piece. Some even now prefer it thus, though the fatigue which it causes to the left arm in lifting the posterior vaginal wall and perineum, constitutes an objection to it.

Method of Introducing Valvular and Cylindrical Specula.—The patient being placed in position on the back, as already explained, and the speculum, probe, and whatever other instruments are to be employed, laid in a basin of warm water at the bedside, the physician seats himself in a chair, or if a low bed be used instead of a table, kneels or sits upon a stool. The finger, having been thoroughly lubricated with soap or carbolized vaseline, is passed up, and the location of the cervix ascertained. The speculum, similarly lubricated, is then passed in this way; if the cylindrical instrument be used, the perineum is depressed by its tip, and it is very slowly and gently inserted and carried to the cervix; should one of the valvular varieties be employed, it is inserted closed, and expanded after reaching the cervix.

• *Introduction of Sims's Speculum and its Varieties.*—In this method of examination the element which commands success is not the use of the instrument, but the position of the patient. If the position recommended by Sims be attained, exposure of the cervix will be easy; if a similar but not *identical* attitude be substituted, the examination will prove entirely unsatisfactory.

The object of the position is to allow the abdominal viscera and walls to gravitate, so as to draw the anterior wall of the vagina forwards, in a direction opposite to that impressed upon the posterior wall by the speculum. To accomplish this the patient must be not on her back, nor on her side, but in a position between the two. This is well represented in Fig. 19. The left arm must be drawn behind the patient so as to let her rest on the left side of the chest, and the right leg be so flexed as to let the right knee lie just above the left.

When the patient is arranged, the correctness of the posture may be tested by noting that the lower trochanter is not just opposite the upper, but nearer to the examiner by two or three inches. I am thus particular in describing this position, first, because it is difficult for one unaccustomed to its employment to place his patient properly in it; and, second, because upon its *perfect* attainment depends the successful use of Sims's speculum. The patient being in position, the speculum is introduced, the posterior vaginal wall elevated by it and the anterior depressed by the depressor, Fig. 15, held in the other hand, or by the mechanical depressor represented in Fig. 18.

One reason why the great advantages of Sims's speculum are not more generally recognized and acknowledged is unquestionably to be found in

FIG. 19.



Nurse holding Sims's speculum. (Sims.)

the fact that the patient is not properly arranged before its introduction. To impress this fact and to show how faulty the arrangement of the pa-

FIG. 20.



Position of woman in examining with Sims's speculum. (Leblond.)

tient may be, I introduce a diagram from a recent and very excellent French work upon gynecological surgery.

No diagram could better represent how the woman should not be placed than this.

THE UTERINE SOUND.—This valuable diagnostic means, although to a certain extent known in ancient times, was more recently recommended in 1828 by Samuel Lair.¹ It was not however adopted upon his recommendation, and it was not until about the year 1843 that it was generally accepted. At this time its claims were simultaneously urged by Simpson of Edinburgh, Huguier of Paris, and Kiwisch of Prague, working without concert. It matters little to which of them belongs the credit of having been the first to conceive the idea of the regeneration, to Simpson certainly belongs that of having forced it upon the attention of the profession and established its value by clinical evidence.

The instruments in general use are those of Simpson, Valleix, Huguier, and Kiwisch, which resemble each other closely in principle, each consisting of a stiff metal rod divided into quarter inches and bent so as to pass in the axis of the healthy uterus. The method of their introduction is this: the index finger of one hand being introduced into the vagina and placed against the cervix, the sound is by the other slid upon its palmar surface to the os, passed into it, and by depression of the handle gently advanced to the fundus. If the uterus be in its normal position, and the sound be used by a skilful hand, the operation is not difficult. But it is not the healthy uterus which we are generally called upon to explore. If the organ be displaced, the difficulties and dangers attending the employment of the sound are considerable, as may be judged of from the following quotations:—

Becquerel² says: "But its employment is attended with such difficulty that it requires all the skill of an adroit and experienced practitioner, and we dread seeing it popularized among young physicians of little skill and experience." Nonat³ declares that, "on account of the accidents which sounding may excite, it should only be resorted to with great caution and in those cases where its necessity is clearly shown." Scanzoni⁴ candidly acknowledges that, "in the first place, the uterine sound is by no means so harmless as has been asserted," and then goes on to sum up the evils which may result from it. But I will not quote more; this suffices to show how the difficulties and dangers to which I have alluded are regarded by some of the best authorities of our day.

The facts which may be ascertained by the sound are these:—

1. The capacity of the uterus.
2. The existence of growths within it.
3. Deviations of the course of its canal.
4. Differentiation of displacements from uterine tumors.
5. The mobility of the uterus.

¹ Samuel Lair, "*Nouvelle méthode de traitement des ulcères, ulcerations et engorgement de l'utérus*," 1828.

² *Maladies de l'utérus*.

³ *Maladies de l'utérus*.

⁴ *Diseases of Females*, Am. ed.

The great importance of these facts with reference to diagnosis is evident, and one would suppose that an instrument revealing so much would be universally employed. Such, however, is not by any means the case. By adepts it is commonly resorted to, but in general practice will be found many, indeed a majority, who do not employ it from fear of its results, the difficulty of its introduction, and uncertainty as to its revelations.

Dr. Sims has, however, furnished us with a new instrument and method for probing the uterus, which acts upon an essentially different principle from that formerly employed, and makes the investigation so simple and void of danger, that I strongly recommend its adoption.

Fig. 21 represents the sounds of Simpson and Sims, for the purpose of contrasting them. The first is a strong, unyielding staff, composed of German silver, and as large as a No. 3 catheter.

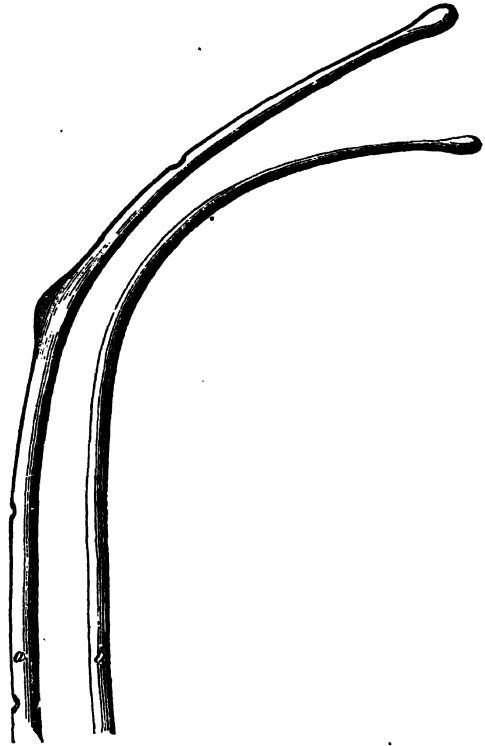
The second is not a sound, but a probe, only a little larger than the ordinary surgical probe, composed of pure silver or copper, and perfectly pliable.

Mode of Probing the Uterus.

—While the woman lies on her back, the examiner, by vaginal touch, carefully ascertains the position of the uterus, by passing his finger, first into the fornix vaginae, over its posterior face, and then along the base of the bladder, over its anterior wall. This gives him

a definite idea of the direction of the canal along which he is to pass his probe, and without it he should never essay the procedure. The speculum is then introduced, the patient being turned on the left side. The examiner then takes the probe, and with his fingers gives it the exact curve which he supposes the uterine canal to have, and gently endeavors to pass it in. Should he fail, he withdraws the instrument, alters the curve slightly, and makes other attempts until he succeeds, which will be very soon if he has used this method so often as to have given himself experience. Every effort at introduction is made as cautiously as if the

FIG. 21.



Sounds of Simpson and Sims compared.

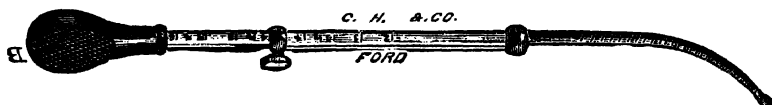
probe were passing into the larynx instead of the womb, and no force whatever is exerted. Success is attained by properly curving the probe, and by that alone. Sometimes the inflection given to it must be the arc of a small circle; at others a sharp angle; sometimes the instrument is left perfectly straight; in fact every variety of direction may be given it. In a certain set of rare cases, even a spiral twist is required.

Thus employed, the uterine probe becomes a means of verifying a diagnosis which has been made by touch, and is certainly safe, easy of introduction, and painless. It may be used in all cases except pregnancy, doing no injury even in endometritis, so gentle is its entrance into the inflamed cavity.

No one can dispute the fact that having been passed it performs the chief functions of the sound, proclaiming the course, length, and capacity of the uterine canal.

As the practitioner grows in skill in the practice of conjoined manipulation, that most valuable and reliable of all his means of diagnosis, he will less and less frequently find a resort to the sound or probe necessary. In the vast majority of his cases he will by that means so clearly determine all that the sound or probe could reveal, that he will feel satisfied without further investigation.

FIG. 22.



Jenks's elastic sound.

Some cases of enlarged uteri, with or without the presence of submucous fibroids, require the use of an elastic sound for their full exploration. For this purpose sounds of gum elastic and whalebone have been employed. A very excellent elastic sound of metal has been devised by Dr. E. W. Jenks, of Chicago, and an exceedingly ingenious one by Jenison, which will be elsewhere represented.

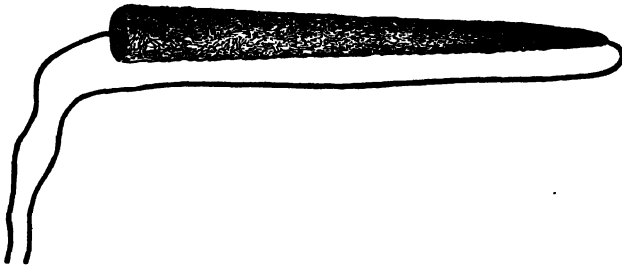
TENTS.—Before the time of Récamier, the cavity of the uterus was a space entirely closed to investigation and local therapeutics, unless the os were greatly dilated by disease. He not only aspired to an accurate knowledge of its affections, but boldly applied his remedies directly to the diseased surface; and, in cases of intra-uterine granulations, scraped off the diseased mucous coat with the curette. Even to him, however, the diagnosis of diseases within the cavity, when the os was closed, was an impossibility, and for the means of combating this difficulty we are again indebted to Dr. Simpson, who, in 1844, placed the use of sponge-tents among the most important of our resources for diagnosis.

The object for which they are employed is the dilatation of the cervical canal, in order that the cavity of the body may be examined by touch or sight, and that treatment may be applied in cases of polypi, granulations, fibrous tumors, hydatids, removal of the products of conception, etc.

Various substances have been recommended for the manufacture of tents, only two of which have thus far come into general use, compressed sponge and the *laminaria digitata*, or sea-tangle.

The practitioner should no more think of preparing his own spongetents than his extracts or tinctures. They are now made by those who possess much more skill and experience than himself, and by procuring them from these manufacturers the interests of both himself and his patient will be subserved. They should be steeped in a solution of carbolic acid

FIG. 23.

A sponge-tent, with thread passing through it.¹

as an antiseptic, and may be medicated with iodine, zinc, copper, or other substances. The cord attached to a tent should always pass through it, and out at its upper extremity. A neglect of this simple precaution has repeatedly allowed a tent to break upon its removal, and one-half to remain in the cavity of the body of the uterus.

Preparation of Sea-Tangle Tents.—In 1862,² Dr. Sloan, of Ayr, Scotland, first recommended the use of this substance for dilating the cervix uteri. The *laminaria* is an aquatic plant found upon various parts of the Atlantic coast of Europe and America. That found in the Bay of Fundy, I am informed by Messrs. Tiemann & Co., is far superior to any other with which they have experimented. This plant, when saturated with moisture, swells to three times the bulk which it has when thoroughly dried. In its moist state a long piece of it is perforated at both extremities, in order that it may be hung up and allowed to dry, a weight being attached to the lower end so as to stretch it and make it straight. When dry, this is cut into pieces from two to two and a half inches long and made

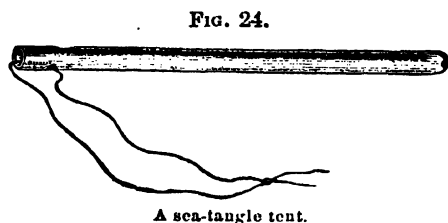
¹ The extremities of this thread should of course be tied together.

² Glasgow Med. Journ., Oct. 1862.

perfectly smooth and round by a knife, a piece of glass, or sand-paper. Tiemann & Co. prepare them very beautifully by turning in a lathe.

Dr. Greenhalgh, of London, has improved these tents by having them perforated from one extremity to the other, so as to make them tubular

instead of solid. Thus prepared they will dilate much more rapidly and completely. One of Dr. Greenhalgh's tents is represented in Fig. 24.



The advantages of these tents over those made of sponge consist in their creating no fetor, and presenting no animal matter

for absorption. Their disadvantages are their requiring a longer time for expansion, their being kept in the cervix with greater difficulty, and offering a harder substance to the walls of the cavity of the uterus.

The late Dr. Nott, who experimented extensively with them, arrived at conclusions very much in their favor, as will be seen from an examination of his deductions which I here place before the reader.

"1st. Where moderate dilatation is required, the laminaria is preferable to the sponge-tents.

"2d. If placed in warm water, just before introduction, for a few minutes, they become flexible, coated with mucilage, are easily curved to suit the cervical canal, and may be inserted with the utmost facility.

"3d. From their smoothness and softness they are removed without force, and produce no abrasion or irritation.

"4th. They may be medicated with morphia, iodine, or anything soluble in water, but do not absorb alcoholic solutions or glycerine. After being so charged, they may be dried and kept for use an indefinite time.

"5th. They do not become putrid, and therefore poisonous, as do sponge-tents, and may therefore be retained twenty-four hours or more with impunity.

"6th. The black, ovoid laminaria, from the Bay of Fundy, is much preferable to the other varieties yet brought to our markets, and free from the objections made to laminaria by some writers.

"7th. The laminaria will be found of great benefit in obstructive dysmenorrhœa, if introduced a few days before the menstrual period, and also in cases of uterine catarrh connected with contracted cervix; they prepare the way well, too, for all intra-uterine medication. In either case, if softened in hot water before introduction, they rarely produce any pain or irritation.

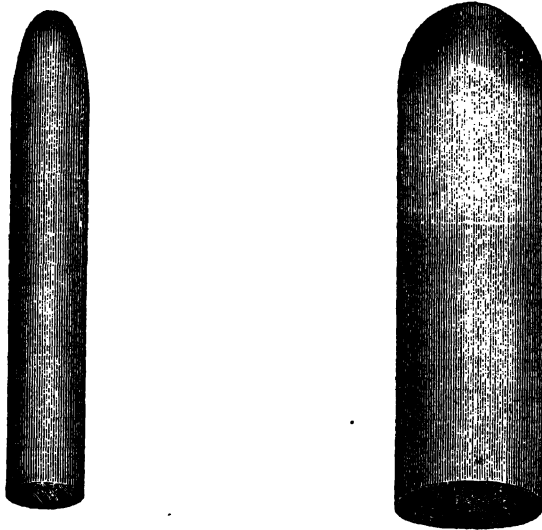
"8th. It is better to insert several small tents than one large one, as the small ones expand more rapidly than the large ones."

The last point here mentioned is one of great importance in their use, and for its recognition we are indebted to Dr. Kidd, of Dublin. He thus

speaks of it. "When the uterine tissues are relaxed by hemorrhage, a fine tent can be passed at once through the whole length of the cervix and on to the fundus, and by a little care a number of fine tents can be packed alongside of one another in the canal, when a single large one, though not nearly of the size of the bundle so formed, could not be passed at all. The first tent introduced serves as a guide to the others, and when they absorb fluid and swell out, they not only dilate the os internum as much as the os externum, but also the cavity of the uterus itself."¹

Of late Dr. G. E. Sussdorff, of this city, has recommended the use of tents made of wood of the tupelo or nyssa, a tree growing throughout the Southern States. Upon his recommendation I commenced the use of these tents, and have been so much pleased with them as to have for the past year employed them very generally. They do not upon absorption of moisture expand as much as sponge, but they make up for this defect by

FIG. 25.



A tupelo tent before and after introduction and expansion.

unyieldingly maintaining their increased size after expansion which sponge fails to do. Fig. 25 represents one of these tents before introduction by myself, in a case of a patient suffering from a submucous fibroid, and the same upon removal at the end of twenty-four hours. The figures are of natural size.

The tupelo tent has, I feel sure, a brilliant future before it. While it will not entirely supersede sponge, it will in a great many cases replace it.

Mode of introducing Tents.—If the uterus be low in the pelvis and its

¹ Dublin Quarterly Journ., Feb. 1869.

neck dilated, a tent may be held in the bite of any pair of uterine dressing-forceps and slipped in without the speculum, the woman lying on the back. In ordinary cases they should be introduced through the short cylindrical, or one of the varieties of Sims's speculum. The introduction is most easily accomplished with the last in all cases, and in some it can only be

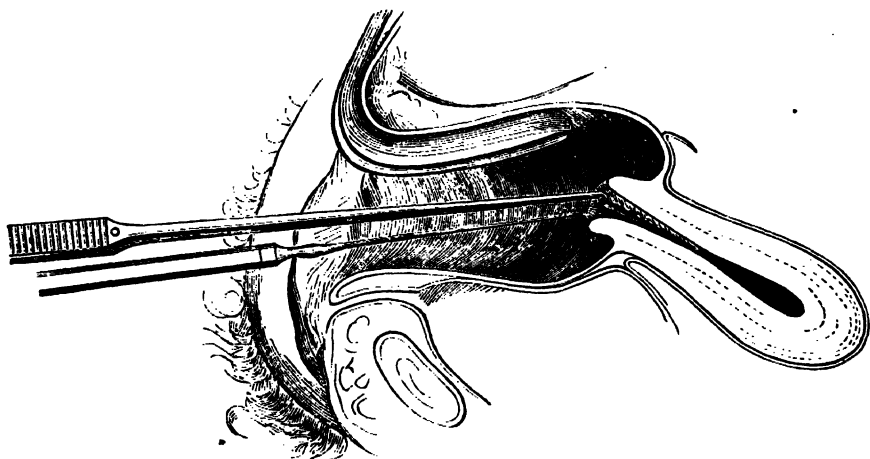
FIG. 26.



Tenaculum for fixing the uterus.

effected with it. Before the introduction of the tent the vagina should be syringed out with carbolized water, and the tent, having been lubricated with carbolized vaseline or gelatum petrolei and grasped by a pair of forceps, is directed in coincidence with the uterine axis as ascertained by the probe, and gently pushed through the cervix, as represented in Fig. 27.

FIG. 27.



Introduction of a tent. (Sims.)

After this the vagina should be syringed out with carbolized water, a mass of carbolized cotton packed against the cervix so as to exclude atmospheric air and keep the tent in place, and the woman be directed to remain in bed until it is removed.

Its removal is accomplished, through the speculum, after removal of the cotton and syringing with carbolized water, in from twelve to twenty-four hours, with the same forceps by which it was introduced, or by traction upon the thread attached to it, the patient lying upon the back.

Dangers.—There is always danger in dilating the cervix by tents, though it is by no means so great as to make one hesitate in employing them, for the cases which demand them are often urgent ones, and they

serve a purpose not attainable by any other means. It is much to be regretted that practitioners have not shown more alacrity in publishing unfortunate results from the use of this method of exploration and treatment. Had all the fatal cases which have resulted from accidents due to tents been faithfully recorded, the list would now be a long one, and it would be greatly lengthened by a record of all the instances in which tedious, exhausting, and dangerous disease has thus been excited. It may then be asked whether it is right to recommend a method accompanied by so much danger. The same line of argument applies to this question, which does to so many similar ones in medicine. Great dangers attend the use of anæsthetics, of narcotics, and of other means which are in daily use, but the *proportion* of accidents occurring from their use is small although the aggregate is large; and the good which they effect is so great that their evils must be condoned.

In my own practice I have met with four fatal cases resulting from the use of tents. In one they were employed to remove a foetal shell which had been retained for two months and was destroying the patient's life by septicæmia; in the others the cervix was being dilated for the removal of fibrous polypi, the hemorrhage from which had greatly exhausted the patients. One of these women died from tetanus, one from peritonitis, one from an overwhelming and sudden attack of septicæmia, and one from sloughing of a fibroid and chronic septicæmia.

Some time ago I was called in consultation to the bedside of a lady who was dying of general peritonitis, which had arisen one week after the removal of a sponge-tent employed for dysmenorrhœa by her physician, who was a most careful and competent practitioner. Dr. Braxton Hicks says, "I have seen a case end fatally where there had been dilatation a week previous; mental shock suddenly lighting up the inflammation and extending it to the peritoneum." Besides these cases I have seen, as every other gynecologist has who has employed this means to any extent, a number in which the following affections have been excited by tents: pelvic peritonitis, peri-uterine cellulitis, septicæmia, endometritis, and hæmatocele.

This is the record of my own practice, and my observation of that of many of my friends whose results I have had an opportunity of seeing exactly agrees with it. Let it be remembered that many of the operations of gynecology are performed after dilatation of the cervix by tents. A fatal result ensuing is commonly attributed to the operation. With my experience I cannot doubt that the preparatory dilatation is accountable for it in many cases.

In view of the great suddenness with which the dangerous symptoms which follow the use of tents develop themselves, I confess myself greatly at a loss to account for the method by which they establish the morbid train. My impression is that the tent establishes a lymphangitis or angiopleucitis in the abundant network of uterine lymphatics, and that

from this source, as in cases of dissecting wounds, a rapid advance of inflammation takes place to neighboring parts. In this way the peritoneum and pelvic areolar tissue are reached; in this way septicæmia develops itself.* How else could these parts become affected in the course of twelve or twenty-four hours? Even if a septic endometritis were established which reached the peritoneum through the Fallopian tubes, peritonitis would be the invariable result, which is not the case, and the development of this would probably be less rapid.

This subject is one of so great importance that I deem it best before leaving it to enumerate certain rules which should always govern the practitioner who resorts to this valuable, but at the same time unquestionably hazardous, method of diagnosis and treatment.

1st. In the introduction of a tent no force whatever should be employed. Should that first essayed not pass the os internum easily, it should be at once withdrawn, and either bent so as to follow more accurately the course of the cervical canal as ascertained by the probe, or exchanged for a smaller tent.

2d. A tent should never, under any circumstances, be introduced at the physician's office and the patient allowed to go home with it in utero. Such practice is hazardous in the extreme. Even when introduced at the patient's home she should at once be confined to the recumbent posture and kept perfectly quiet. The tent should be covered with carbolized vaseline.

3d. The practitioner should always investigate as to the previous existence of chronic pelvic peritonitis or cellulitis, two of the most common of the diseases of women. Should they have existed, tents should be carefully avoided. In most of the instances in which I have seen dangerous results follow their use, one of these conditions had previously existed and been excited into activity by them.

4th. A tent should never be allowed to remain in the uterus more than twenty-four hours, and if it be compatible with the accomplishment of the desired result, it should be removed in twelve hours.

5th. Just before and just after removal of a tent, the vagina should be washed out with an antiseptic fluid, and if any pain, chilliness, or discomfort follow the removal, opium should be freely administered and perfect quietude enjoined.

6th. After removal of a tent, the patient should be kept in bed for at least twenty-four hours, and never allowed to travel before the expiration of four or five days.

I am fully aware that these precautions will be incredulously received by those practitioners who have habitually, and with impunity, inserted tents at their offices, and sent the patients home with directions to remove them, by means of the cord, on the next day. But it is the duty of every conscientious man to give weight to the experience of others. If it were

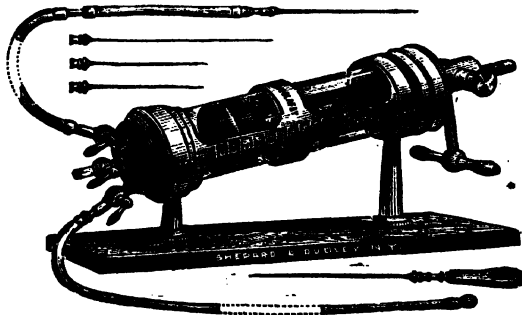
essential for every practitioner to lose one patient from this or any kindred cause before regarding it as really dangerous, the number of fatal cases would necessarily grow very large.

THE EXPLORING NEEDLE.—By means of a long, delicate needle, or very narrow tube, constituting a canula for a trocar the size of a small knitting-needle, the contents and characters of tumors in the pelvis may be ascertained. These instruments are not employed in treating cysts, but are required only to remove sufficient fluid to announce the character of the contents of the tumor. Sometimes a tumor, supposed to be solid and irremediable, is thus proved to be amenable to treatment.

THE ASPIRATOR.—To whom belongs the credit of originating this method of evacuating the fluid contents of tumors or cavities I am unable to say. M. Courty alludes to it as a method of emptying ovarian cysts in use ten years before the appearance of his work, and mentions the instruments employed for that purpose by Buys, Monro, Guérin, and Boinet. To M. Dieulafoy, of Paris, certainly belongs the credit of systematizing and popularizing it to such an extent that it must be looked upon as a great resource, not only for diagnosis, but treatment of many of the morbid states with which the gynecologist is called to deal.

This method consists in the introduction of very slender, long needles perforated by a capillary tube, into tumors in regard to the characters of

FIG. 28.



Dieulafoy's aspirator.

which it is desired to decide; connecting these by gutta-percha tubes with a glass cylinder in which a powerful piston plays very accurately; and creating a vacuum in this by drawing the piston upwards. Powerful suction is thus exerted upon the material in the cavity penetrated by the needle, and, if it consist of fluid not too tenacious to flow through so small a needle, it passes through the tube and enters the cylinder. Fig. 28 exhibits the most recent modification of Dieulafoy's aspirator. Such instru-

ments, very perfectly constructed, can now be obtained of the instrument makers of this city.

One great advantage possessed by this instrument consists in the fact that the needles are so delicate that the intestines, the bladder, solid tumors, or even important secretory organs may be penetrated without great danger. The sac imprisoned in intestinal hernia, the large intestine distended by gases, the bladder threatened with rupture by impassable stricture, have all been tapped by it with impunity.

Before passing the needle into the tissue of a tumor or other growth it should always be immersed in hot carbolized water and thoroughly cleansed.

Should the operator not have this instrument at his disposal, the same principle may be applied to diagnosis by the use of the ordinary hypodermic syringe, as suggested by Dr. H. F. Walker, and sufficient fluid obtained for chemical and microscopical examination.

This method of exploration may be applied to all pelvic and abdominal tumors, with the best results.

In the use of the aspirator too much care cannot be observed as to cleansing the needles before introducing them. The fluid of ovarian cysts is often withdrawn by them, then the needle used is carelessly washed, put aside, and again used at the infinite risk of contamination of another patient. Not only should the needles be scrupulously cleansed after, but before being used; and immediately before introduction they should be dipped in a carbolized solution.

THE MICROSCOPE.—The microscope will often prove useful as an aid in diagnosis in determining the malignant nature of certain morbid growths, the character of products of inflammation, the connection of intra-uterine growths with conception, the purulent nature of uterine leucorrhœa, and the deleterious effects of uterine discharges upon the zoosperm in the production of sterility. In several cases of obstinate metrorrhagia dependent upon an unascertained cause, I have been able, through cervical dilatation and the use of the curette, to obtain material sufficient for a positive diagnosis of sarcoma or cancer of the body, by this instrument. One case has come to my knowledge in which many of the symptoms of cancer of the body existed, but in which the error in diagnosis thus created was corrected by a removal of a portion of the supposed morbid growth and examination by the microscope. By this instrument the substance was pronounced to be not cancer but sponge, and further investigation proved that one-half of a sponge-tent had remained in the body of the uterus for several months. A similar case has been reported to me, in which a piece of cotton was long retained, giving rise to very anomalous symptoms. A portion being removed, the microscope revealed its true nature.

Of late, Foulis and Thornton have pointed out the important fact that examination of the abdominal effusion accompanying cancer of the ovaries reveals the cancer-cell, and leads to a correct diagnosis; and Drysdale has proved the great value of the microscope in examination of ovarian fluids and the determination of the diagnosis by them.

AUSCULTATION AND PERCUSSION.—The important assistance of auscultation and percussion in mapping out the size of tumors, determining pregnancy, differentiating this from ovarian cysts, etc., is so evident as merely to require a passing mention.

RECAPITULATION OF MEANS FOR EXPLORING THE VISCERA AND TISSUES OF THE PELVIS.

1st. *Vagina and Cervix*—

Vaginal touch;
Sight, through the speculum;
Conjoined manipulation.

2d. *Outer Surface of the Uterus*—

Vaginal and rectal touch, while the organ is brought within reach by hypogastric pressure or the tenaculum;
Conjoined manipulation;
Vesico-rectal exploration;
Simon's method.

3d. *Cavity of Cervix and Body*—

Tents, followed by introduction of finger.
The uterine probe and sound.
Removal of substance by curette and use of microscope.

4th. *The Ovaries, Broad Ligaments, Pelvic Peritoneum, and Pelvic Areolar Tissue*—

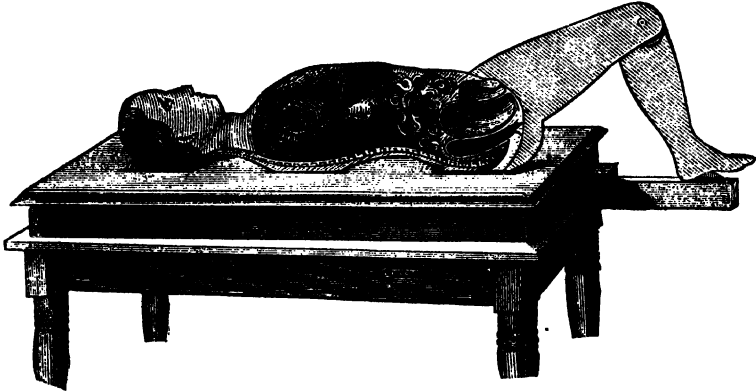
Vaginal touch;
Rectal touch;
Simon's method;
Conjoined manipulation;
Abdominal palpation;
Auscultation and percussion;
The exploring needle;
The aspirator.

It is so difficult for a teacher to give instruction to a class upon the subject of diagnosis of the diseases of women that I am induced by that consideration to give a representation of a manikin figure which has given me great satisfaction in this connection.

This figure is made of thick board, painted to resemble the human female, the legs being articulated, and the whole fixed to a table like that represented in Figs. 6 and 7. Upon the part representing the trunk all

the abdominal, thoracic, and pelvic organs are painted except the uterus. In place of this a peg or pivot is fixed, and upon this uteri, of all shapes and sizes, flexed, with tumors, enlarged, inverted, etc., may be fixed to

FIG. 29.



Manikin figure for teaching diagnosis.

illustrate cases presenting themselves clinically. After examination on the back, the figure is placed in Sims's position, the table elevated at one side, and the speculum and sound are employed. The sense of sight is made to supplement that of hearing, and instruction is made clearer by this means.

CHAPTER VI.

CONGENITAL AND INFANTILE MALFORMATIONS OF THE FEMALE SEXUAL ORGANS.

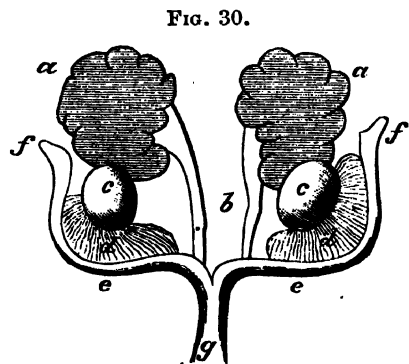
MANY cases of disease are due to congenital malformation of the ovaries, or uterus, or to deformities arising from arrest of or disproportionate development during girlhood. Up to the period of puberty the uterus, ovaries, and vagina are unimportant organs in the female economy. At that time they rapidly develop and immediately assume most important relations. During their period of insignificance, even if the most striking malformation exist, it produces no evil result, and, unless some accidental circumstance reveal it, is not recognized or even suspected. Puberty arrives, the girl becomes a woman, and all is changed. Upon the efficient performance of the functions of ovulation and menstruation are, for the next thirty-five or forty years, to depend in great degree the health, the usefulness, and the happiness of the woman.

Preparatory to the performance of these functions the pelvic viscera have been steadily though very slowly developing, and now with great suddenness an important duty is thrown upon them. If during uterine life their development has been defective, or if during the period intervening between birth and puberty they have either not sufficiently grown or have grown in such a manner as to be misshapen, then are they incompetent to the performance of the duties required of them, and certain diseased conditions are the result.

I shall consider only the most important of these, and it must be borne in mind by the student that their importance must not be estimated by the possibility of their relief. The recognition of the fact that a pathological state is irremediable and that treatment for it is inadvisable is always a matter of as great moment as the ascertaining that a more fortunate state of affairs exists. In all departments of medicine, but especially in gynecology, treatment which accomplishes no good necessarily tends to the production of evil.

Development of Generative Organs.—In the lumbar regions of the fœtus, before the end of the second month, the anatomist Wolff discovered two bodies, each consisting of a large number of tubes closed at one extremity and by the other opening into a common excretory canal. These have since been known as the Wolffian bodies, and from them essentially spring the male internal organs of generation, but not so the female. At the inner border of each Wolffian body lies a germ which, remaining unchanged until the second month, develops into the ovary of one side, while the Wolffian body gradually becomes atrophied.

From the inner sides of these descend two ducts, called the ducts of Müller, which passing downwards side by side unite at a point just below one where the urethra of the fœtus begins to show its rudimentary formation. At about the end of the second month, these ducts begin to approach each other more nearly at a point in the pelvis, and, gradually coalescing and their inner walls disappearing, the vagina and cervix, and, at a later period, the corpus uteri are created. The upper portions of the ducts passing off to each side obliquely constitute in the future the Fallopian tubes. Fig. 30 will show the coalescence of the Müllerian ducts in the foetal sheep.



Coalescence of Müllerian ducts in a foetal sheep. (I. Müller.)

A rudimentary vagina, Fallopian tubes, and uterus are thus formed, and gradually go on to full development during the rest of foetal life. Any

arrest of development affecting the ducts of Müller, any imperfection of them, or any failure in coalescence of the two ducts, even when fully developed, inevitably gives rise to malformation or deformity. Some of these produce grave consequences at puberty; others are so wanting in result that the functions of the woman are healthily performed in spite of them. Their very existence even may never be revealed, or be discovered only by accident towards the end of or after menstrual life.

The varieties of congenital malformation of these parts which I shall consider are the following :—

Hypertrophy of the uterus.

Absence or rudimentary state of uterus, ovaries, or vagina.

Unicorn and bicorn uterus.

Double and divided uterus and vagina.

Congenital misplacement of the uterus.

Hypertrophy may affect the fœtal uterus and ovaries, and as a result the child be born with this organ and the external genitalia as fully developed as they should normally be at puberty. In these monsters by excess of

FIG. 31.



A. S., aged 4 years and 9 months. Menstruated regularly from the age of 21 months.

development, the most remarkable sexual precocity sometimes shows itself. Instances are recorded in which menstruation began at birth or within a month after, and one case of undoubted authenticity is reported in which menstruation beginning at two years, parturition at full term occurred when the mother was only eight. Fig. 31 represents a girl whose case was brought to my notice some years ago.

I have seen another case in which menstruation began at eight months and continued regularly.

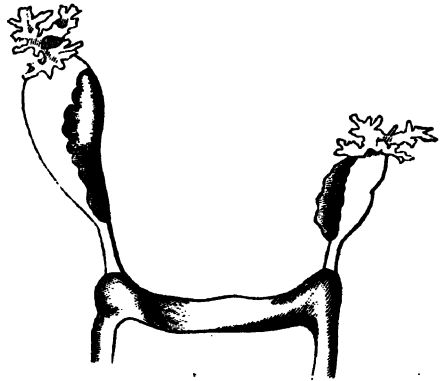
Absence, and Rudimentary Development, of Uterus and Ovaries.—At times an entire failure, not only of coalescence but of development, occurs in Müller's ducts. The Fallopian tubes, uterus, and vagina are all absent, and very often in such cases the ovaries likewise. In other cases the uterus is absent, while the vagina, Fallopian tubes, and ovaries are developed, coalescence of the ducts having failed while development above and below has occurred.

Entire absence of the uterus, tubes, and ovaries, as proved by post-mortem examination, not by physical exploration during life, is of so rare occurrence that some pathologists have doubted its existence. When it occurs it usually does so in infants who suffer from want of development of the lower half of the body. It must be borne in mind that sometimes rudimentary uterine horns exist which, in a physical examination, cannot, even by the most practised touch, be distinguished from portions of the oviducts and ovaries. In some cases of undoubted rudimentary uterus only a slight nodular hardness can be discovered where the uterus should be, which feels like an aggregation of areolar tissue only. There can be little doubt that these cases are clinically often classed with those of absence of the uterus.

The rudimentary uterus is often accompanied by a similar condition of the ovaries, vagina, and even the mammae and external genitalia. In such cases the vagina will often be found as a cul-de-sac measuring only one or two inches. This, however, under sexual efforts long and perseveringly continued, often undergoes great elongation and development. When this fails the urethra sometimes undergoes dilatation, and, being penetrated by the virile organ, acts as a vicarious vagina.

The rudimentary uterus usually appears under one of these forms: a thin membranous expansion spreads from the extremities of the Fallopian tubes and round ligaments towards the vagina; a round, hard, two-horned solid body marks the site of the uterus; a flattened, crescentic line of tissue occupies the site of the uterus, extending across the pelvis with its convex surface looking upwards; the cervix being entirely wanting, the semblance of a body is present without a cavity; the body with cornua exists, but without perforating canal; or, lastly, the cornua exist with cavities

FIG. 32.



Bow-shaped rudiment of uterus. (Nega.)

within them, while the body and cervix uteri are both very rudimentary in their development.

Since the days of modern gynecology, this anomaly has been found to be of not very rare occurrence; previous to that period many cases went undetected because uninvestigated. The attention of the physician is usually drawn to their existence by the fact that the girl arriving at sixteen or seventeen years has never menstruated, and her relatives have become apprehensive; or marriage is anticipated, and the girl or her mother, unwilling to assume its responsibilities while mystery exists with reference to so important a subject, desires investigation; or the girl, suffering from uterine enlargement, the result of retention of menstrual blood, is accused of illegitimate pregnancy and is brought for the physician's decision of the matter; or, worse than all, marriage has been contracted, the husband not having been candidly dealt with, sexual intercourse has been found to be impossible, and he brings his wife for examination.

In such cases the physician's duty, if he be cognizant of the facts before marriage, is too clear to require mention. So grave does the law regard a fraud of this kind that it is considered a sufficient ground for divorce. The physician may likewise be consulted, as I myself have twice been, as to the propriety of marriage, the man knowing perfectly the imperfections of his proposed wife, and appreciating that not only are menstruation and conception impossible but sexual intercourse likewise. As long as the laws of physiology hold true, so long will it be the duty of the medical adviser to oppose under such circumstances the contraction of a tie which must, unless the husband be more or less than man, prove, in a short time, a source of sorrow and disappointment.

The evils which result from this distressing anomaly of sexual development are not merely the remote and contingent ones just mentioned; there are others which are almost inherent to it. These are absent in the most decided cases of want of development, and present in those which are less complete. Thus if uterus, ovaries, and vagina be really absent or decidedly rudimentary, the woman may pass a long life if she does not contract marriage, not only without suffering, but without knowledge of her imperfection. If, however, a complete atresia exists in the lower portion of the uterus only or upper portion of the vagina, while the ovaries are sufficiently developed for ovulation to occur, menstrual blood collects, distends the uterine cavity, sometimes regurgitates through the tubes, or ruptures them, or furnishes material for septic absorption.

Such cases sometimes terminate fatally from these causes, and not rarely from the results of surgical procedures adopted for their relief. They will be elsewhere considered in reference to this aspect of the subject.

Where the uterus is almost or entirely absent and the ovaries present, the most aggravated derangements of the nervous system, hysteria, epilepsy,

and mental disorders sometimes show themselves. In such a case seen in consultation by Drs. Peaslee, Emmet, and myself, extirpation of the ovaries was decided upon and performed by Dr. Peaslee. Unfortunately the result was a fatal one. In a similar anomaly mentioned by Duplay,¹ a post-mortem examination gave unequivocal evidences of ovulation. Repeated small hematoceles must, of course, have been the consequence, as neither oviducts nor uterus existed.

The question of treatment in such cases turns entirely upon the propriety of the surgical resource of opening a free passage through the atresic cervix uteri or vagina, for the escape of menstrual blood already imprisoned, or for that which may be in the future excited to flow by therapeutic means adopted for that purpose. Before adopting and, as is equally important, before discarding these, a thorough exploration should always be made, and the manifold dangers of the operation, together with its decided chances of failure, should be carefully considered. A great deal of unwarrantable surgery has been indulged in in such cases from neglect of these two duties.

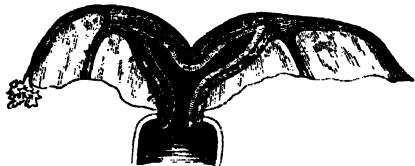
Physical Examination of such Cases.—The patient should be anæsthetized, and placed upon the back upon a table, and the legs flexed by two assistants. Then, the sphincter ani being gently stretched, the index and middle fingers of the left hand should be carried far up the rectum, and conjoined manipulation carefully practised for detection of the uterine body. To this may be added the approximation of the posterior wall of the bladder to the fingers in the rectum by a sound in the bladder, or, if necessary, by resort to introduction of the index finger of the right hand through the urethra in cases difficult of decision. There are no other means of physical exploration at our command, but these, intelligently practised, are very reliable if preceded by anæsthesia, as they should always be.

But he who in these cases relies for his decision upon physical signs alone will surely be misled; rational ones are of equal importance as a guide to surgical interference. A large hard fibrous mass may be found in the position of the uterus, and yet the grave operation for atresia vaginæ might not be advisable. If menstrual blood is discovered imprisoned; if a distinct period of excitement or malaise marking ovulation can be traced; or if the otherwise perfect development, good health, and slight obstructive deformity which exist, all point to the probability that the hard mass in the site of the uterus is that organ with fair degree of development, the patient should be encouraged to submit to operation. If, on the other hand, there be no trace of accumulated menstrual blood; no evidences of an ovular nisus; and none by physical means of distinct presence of a mass in the uterine site, he who resorts to operation is exposing his patient to an unwarrantable risk.

¹ Klob, Anat. Fem. Sex. Org., p. 43.

Unicorn, Bicorn, Double, and Divided Uterus.—Sometimes the Müllerian ducts develop into the two halves of the uterus, but, coalescing

FIG. 33.

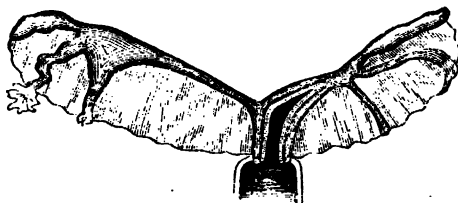


Bicorn uterus. (Schroeder.)

badly, or the walls dividing tube from tube not being obliterated by absorption, deformities of less gravity than those just mentioned may result. One horn alone may develop while the other fails to do so; both horns may develop but unite only at the cervix; or both horns may develop, and although

- they coalesce perfectly their internal walls may not disappear, and thus a septum remain which divides the cavity into two.

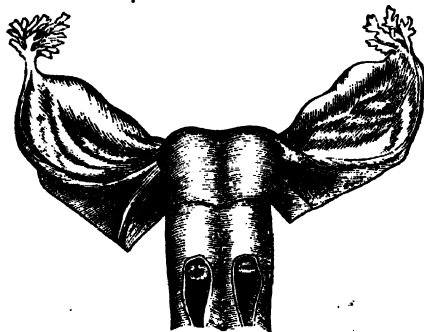
FIG. 34.



Unicorn uterus. (Schroeder.)

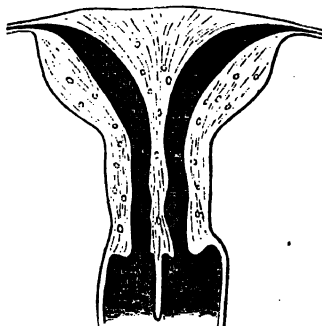
The accompanying figures will give a very good idea of these deformities by arrest of development.

FIG. 35.



Double uterus. (From specimen in possession of author.)

FIG. 36.



Divided uterus. (Kussmaul.)

Some of these deformities create great difficulties in diagnosis and curious problems in physiology: such, for example of the former, as cases in which menstrual blood becomes imprisoned in one dilated uterus while

the other remains empty; and of the latter, instances in which a child is born at full term from one uterine cavity, and in two or three months another from the other, or in which a white and mulatto child, the offspring of different fathers, are produced at the same parturient act.

Ordinarily these malformations produce no evil, and it is probable that only a very small proportion of them come to the knowledge of the patient or physician. They require no treatment.

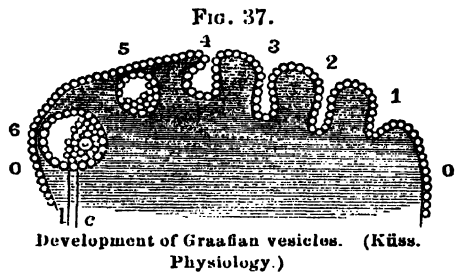
Congenital Misplacement of the Uterus.—Sometimes the uterus is placed, by reason of its peculiarity of development, obliquely across the pelvis, inclining to one or other side; or, one half developing more decidedly and rapidly than the other, a congenital latero-flexion exists; or, the fundus being flattened, what is called the anvil-shaped uterus results. The chief importance of the recognition of these states is connected with prognosis and the futility of treatment for their removal.

Absence and Rudimentary State of the Ovaries.—The ovaries, as well as the uterus, may be either not developed at all or very imperfectly so. These organs arise about the end of the second month of fœtal life from a germ at the side of the Wolffian bodies. As they develop, the outer covering dips in, as shown in Fig. 37, to make the Graasian follicles, which contain the ova, the discharge of which at stated periods constitutes the great function of these glands and the characteristic feature of the female sex. Sometimes these organs contain few if any follicles, and are incompetent to their duty in the economy. The results of this arrest of perfect development are amenorrhœa and sterility, which usually prove entirely rebellious to treatment.

The activity with which this reduplication, and formation of follicles goes on, may be judged of by Sappey's¹ statement that Kölliker counted in a fœtal ovary more than six thousand.

Absence and Rudimentary State of Vagina.—Like the uterus the vagina is created by union of the Müllerian ducts, and like it also is subject to a variety of malformations, due to an arrest of development or failure of complete union. The chief of the anomalies thus created are diminutive, rudimentary, unilateral, and atresic vagina. Some of these are productive of no evil consequences and require no treatment; others will be considered under the heads of Atresia Vaginæ and Retention of Menstrual Blood.

Anomalies of Uterine Development during Childhood.—The uterus is



¹ Courty, Mal. de l'Utérus, p. 66.

an organ which varies greatly at different periods of life in size and shape. In the *fœtus*, the girl at puberty, the nulliparous woman, the multiparous, and the old woman who has lived beyond the menopause, it is a different organ in these respects. In the first the neck is disproportionately large, in the second the body and neck gradually become equal in size, in the third the size of the body preponderates, in the fourth the cavity of the body enlarges and the *os externum* changes its shape, and in the fifth a general physiological atrophy occurs, which diminishes the size of the whole uterus, though affecting the body somewhat more than the neck.

It is the changes, and the anomalies which mark them, occurring between birth and the establishment of puberty, which are now to receive attention. During this time the uterus very slightly develops until puberty is reached, when the rapid development of that period shows itself especially in this organ. During childhood the uterine body is bent forwards, an anteflexion existing. This gradually passes off, leaving only a slight antecurvature, to last through life, as the changes of puberty cause the uterine walls to become dense and resistant. At puberty, as Boivin and Dugès pointed out, and as Cusco¹ more particularly insisted upon, one wall sometimes develops rapidly, while the other correspondingly undergoes atrophy. Anteflexion, or more rarely retroflexion, is the result, and the first menstrual effort is attended by pain and obstruction. Any influence which presses the abdominal viscera down upon the uterus while yet this organ is soft and yielding tends to develop this anomaly, which has received the name of congenital flexion.

Again, the *fœtal* uterus with its disproportionately long neck may disappear, and still the organ, now well proportioned, may not undergo development at puberty, but may remain small and unprepared for its coming functions. This constitutes the incompletely developed uterus of Kiwisch, Rokitansky, and Scanzoni, the pubescent uterus of Puesch, and the congenital atrophy of other writers.

This condition is marked by tardy occurrence of menstruation, and by a feeble, irregular, and scanty discharge; a marked tendency to complete amenorrhœa existing.

Fortunately a good deal of benefit, under these circumstances, often results from treatment calculated to attract nervous influence and nutrition to the deficient organ. The most reliable of these are the cautious, and systematic use of small tents, the employment of an intra-uterine galvanic stem, a current of electricity passed through uterus and ovaries, and the complete establishment of the general health by exercise and tonic treatment.

In some of these cases the most unfortunate results show themselves in connection with the nervous system. In two cases I have seen epilepsy,

¹ Thèse, à Paris, 1853.

and in one mental imbecility, which seemed to be clearly traceable to the absence of sexual development.

Even when no general symptoms show themselves, the undeveloped condition which characterizes these cases to a certain extent incapacitates the female for the duties of wife and mother.

CHAPTER VII.

DISEASES OF THE VULVA.

NORMAL ANATOMY.—The vulva is the elliptical opening which exists at the distal extremity of the vagina, and comprises the mons veneris, labia majora and minora, clitoris, meatus urinarius, vestibule, fossa navicularis, fourchette, and hymen.

Labia Majora.—From the mons veneris, which consists of adipose tissue covered by skin in which exist numerous hair-bulbs, two folds of integument pass downwards to unite at the fourchette. These are called the labia majora. Externally they are covered by skin, which contains scattered hair-bulbs, but on their inner surfaces their covering is mucous membrane, which is studded with sebaceous follicles, the secretion of which is unctuous and semi-solid. These glands are remarkably large, reaching, according to E. Klein,¹ a diameter of 0.5 millimetre. They open immediately upon the free surface.

Within, the labia are filled with adipose tissue, a portion of which is inclosed in sacs, of which one arises from each external abdominal ring and extends downwards towards the fourchette. To these Broca has given the name of dartoid sacs.

The Clitoris.—Beneath the superior commissure of the labia juts forward a little erectile organ, which is analogous to the penis of the male, and receives the name of clitoris. It is covered by mucous membrane, consists of erectile tissue, and arises by two rami, one of which is attached to each ramus of the pubes. Like the male penis, this little organ is provided with a prepuce and frænum.

Labia Minora.—These consist of two folds which, arising at the clitoris, pass downwards and disappear about half way between the two commissures. Like the clitoris they are formed of erectile tissue covered over by mucous membrane, and an attentive examination discovers upon their surfaces a large number of glands, which secrete a sebaceous material.

The Fossa Navicularis and Vestibule are merely spaces intervening;

¹ Stricker's Manual of Histology.

the first, between the perineum and vagina; the second, between the meatus and clitoris. They are both covered by mucous membrane, and the latter is studded with follicles.

The Hymen is a thin veil consisting of a double fold of mucous membrane, which in part closes the ostium vaginae. When ruptured its remains can be distinctly discovered, sometimes not at all diminished in bulk, upon the walls of the vagina.

Passing over the clitoris, to which it is attached, and running downwards on each side of the vulva so as in part to cover the bulbi vestibuli, will be found a muscle, which is, I think, very generally regarded as the sphincter vaginae. Savage¹ denies that it, the bulbo-cavernous muscle, has any such influence, the true sphincter vaginae being the pubo-coccygeus muscle, which is seen by dissection within the pelvis, arising from the inner surface of the pubic bones. Descending on the sides of the vagina some of its fibres pass between it and the rectum to meet others from the opposite side in the perineum. Another set go behind the rectum, and uniting with similar ones from the opposite side, intermix with its circular fibres to make the internal sphincter. The remaining fibres, still more outward, are inserted in the sides of the coccyx.

Vulvitis.

Definition.—Vulvitis is the name applied to inflammation of the mucous membrane lining the vulva. Affecting all of this structure, the surface covered by epithelium and the glands imbedded in it, the inflammatory action sometimes extends through the submucous tissue into the proper structure of the parts underlying it, creating tumefaction, pain, and sometimes even suppuration.

Varieties.—Authorities differ with regard to the classification of its varieties.

That which appears most appropriate is the following:—

Purulent vulvitis;

Follicular vulvitis.

There is a variety of the affection also which is styled gangrenous, but it is so entirely confined to children that its consideration here would be out of place.

Purulent Vulvitis.

This variety of the affection may be either of non-specific form, or a true gonorrhœa of the vulva. The former is in many respects analogous to balanitis in the male, while the latter resembles very closely specific inflammation in other mucous membranes of the body.

¹ Female Pelvic Organs, 3d ed.

Causes.—It may result from

Vaginitis, specific or simple;
 Want of cleanliness;
 Injury, or friction from exercise;
 Eruptive disorders;
 Onanism;
 Chemical irritants;
 Excessive venery.

Symptoms.—The parts are red, swollen, hot, and at first dry. Then a free flow of pus takes place which bathes the whole surface and stains the linen of a yellow hue. In addition to these signs of active inflammation, superficial ulcers will be found scattered over the parts affected, and in rare cases patches of diphtheritic membrane will be seen adhering to them. At times the meatus urinarius becomes affected, and painful micturition, with scalding and heat, is complained of. At others the most intense pruritus affects the vulva, and the patient, in endeavoring to obtain relief, may contract the habit of masturbation. Should the inflammation extend to the vagina, the symptoms of vaginitis will also show themselves, and by a similar extension to the bladder those of cystitis may develop. In severe cases febrile action, with thirst, heat of skin, and general discomfort, is present, but this is not usually the case.

The pus which is discharged, always in the specific form of the disease, and very generally in the non-specific, gives forth a disagreeable odor, and is usually so irritating in its nature as to excoriate the inner surfaces of the thighs when it comes in contact with them. Should this material, even in the non-specific form of the affection, be carelessly brought in contact with the conjunctivæ, a severe form of purulent ophthalmia is excited. The late Professor Bedford gave me the account of a case in which coition under such circumstances gave rise to a urethritis in the male, which was made the basis of a suit for divorce. He was applied to as a medical expert, and found upon examination that non-specific purulent vulvitis, uncomplicated by vaginitis or urethritis, existed.

Course and Termination.—Even without treatment it is probable that the affection would always be recovered from in time; but it would run a lengthy and tedious course, and perhaps give rise to complications which would be productive of greater evil than the original disorder. When properly treated, it generally runs a rapid course and is readily cured.

Treatment.—If inflammatory action be excessive, the patient should be kept in bed, upon low diet, and the bowels freely acted upon by saline cathartics. Emollient applications should be made constantly to the inflamed part, and cleanliness scrupulously observed. The patient should be directed to bathe the vulva freely with warm water three or four times daily, and to apply a warm poultice of powdered linseed, slippery elm, or

grated potato. To the poultices may be added with advantage a solution of acetate of lead and tincture or powder of opium.

As soon as the acute action has subsided, the lead and opium wash should be kept in contact with the parts, by dossils of lint soaked in it and placed between the labia. It is thus compounded:—

R. Tr. opii, ℥ij.
Plumbi acetat. ℥j.
Aquæ, Oj.—M.

At a still later period the diseased surface should be painted over several times a day, with a solution of persulphate of iron and glycerine, one part of the former to eight of the latter. Should the disorder not be entirely eradicated by this treatment, the vulva may be painted over once in every forty-eight hours with a solution of nitrate of silver, ten grains to the ounce of water, and kept constantly powdered with lycopodium, bismuth, or starch, until recovery is complete. Should pruritus attend the latter stages of the disorder, a wash composed of one scruple of carbolic acid to one pint of water will be found useful.

Follicular Vulvitis.

Definition and Synonyms.—It has been already stated that in the mucous membrane lining the vulva, more especially in that covering the labia majora, labia minora, and vestibule, numerous follicles exist. Presenting themselves as solitary glands, they are classified under the three following heads—muciparous, sebaceous, and piliferous. In ordinary purulent vulvitis, these, as component parts of the diseased membrane, are implicated in the morbid action. Sometimes, however, they alone are affected by disease, when the name of follicular vulvitis or vulvar folliculitis has been applied to the condition. Any or all of the varieties of glands just mentioned may be diseased, and authors have given special names to the varieties, so that a list which would comprise them all would be a long one. As examples may be mentioned papillary, pruriginous, erythematous, sebaceous, granular vulvitis, etc.

We may avoid tediousness of detail, and at the same time run no risk of being led into error, by classing all forms of inflammation affecting the solitary glands of the vulva under the head of follicular vulvitis; provided that we bear in mind that all the varieties of glands may be simultaneously affected, or that one set alone may be diseased, the others remaining healthy.

Causes.—This form of vulvitis may be induced by the following influences:—

Pregnancy;
Neglect of cleanliness;
Vaginitis;
Exanthemata;
Eruptions on the vulva.

Symptoms.—There are burning, itching, and heat in the vulva, with increase of glandular secretion. At times the secretion is excessively offensive and irritating in character. The urethra frequently becomes inflamed at its vulvar extremity, and scalding in the passage of urine results. The vulva may become so sensitive to touch, that efforts at sexual intercourse excite vaginismus, which thus constitutes a symptom of the disease.

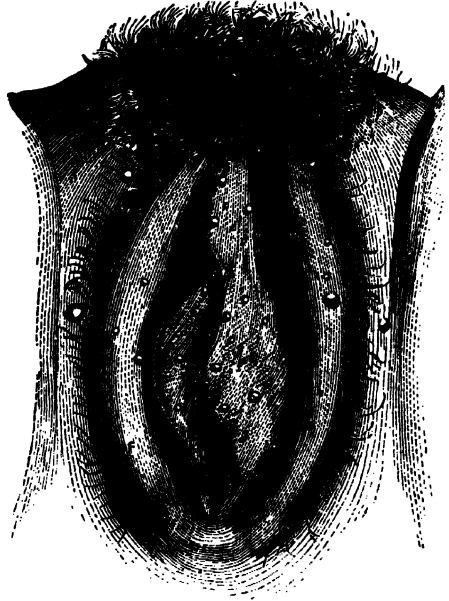
Physical Signs.—If the muciparous follicles be chiefly affected, the mucous membrane of the vulva will be found intensely red in spots or patches, which are slightly elevated. These are most commonly found on the edges of the lower vaginal rugæ, the nymphae, and the carunculæ. They sometimes resemble the swollen villi upon the tongue, and bleed upon slight irritation.

Should the disease have affected chiefly the sebaceous and piliferous glands, little, red, rounded papillæ will be found on the surfaces of the labia majora and minora, and the base of the prepuce of the clitoris. After a while a drop of pus will appear in the apex of each, which is soon discharged, and the distended follicle shrivels. Beneath the labia minora a semi-fluid mass of offensive secretion will generally be found, which will, if not carefully removed, conceal the follicles underlying it.

Course and Duration.—If this disorder occur during pregnancy, it may disappear at its conclusion. In some cases it becomes so severe, and produces such annoying symptoms, that abortion is induced by it. If it exist in the non-pregnant state, and be not appropriately treated, it may continue for an unlimited time and establish urethritis, not only in the patient, but in her husband. This fact should be especially recollected, for a suspicion of want of chastity may be excited in the mind of the husband, and serious domestic difficulty result.

Treatment.—Follicular vulvitis should be treated upon the same principles as the purulent form; by repeated ablution, warm poultices, sedative washes, and local alteratives, especially the persulphate of iron and nitrate of silver. Dr. Oldham, who was one of the first to enlighten the profes-

FIG. 38.



Follicular vulvitis. (Hugnier.)

sion in regard to this affection, placed great confidence in the following prescription :—

R. Acidi hydrocyanici dil. ℥ij.

Plumbi diacetatis, ℥j.

Olei cacao, ℥ij.—M.

S. Apply after washing the parts with cold water.

The chronic form of this affection, which is fortunately rarely met with, constitutes a really formidable and uncontrollable disease. In the American Journal of Obstetrics will be found a remarkable instance of it reported by Dr. B. F. Dawson, which, as typical of that form of the disorder, is worthy of especial notice. The patient, aged sixty years, had suffered from follicular vulvitis since the age of sixteen, and after consulting numerous practitioners in vain, had, on account of the intolerable itching attending the disease, been induced to resort to opium for comfort, until in time she had become a confirmed opium-eater. At the time when the history was given, the following was the condition of the vulva: "On parting the labia, which had to be done with the utmost gentleness, as the patient suffered and flinched at every attempt, the mucous membrane of the labia; as well as the fourchette, was found completely covered over by a thick cheesy substance, of a dirty cream color, which emitted a peculiarly offensive odor." This condition had proved so entirely rebellious to treatment, that removal of the entire mucous covering of the vulva which was the site of the diseased glands had to be resorted to.

Cyst and Abscess of the Vulvo-Vaginal Glands.

Anatomy.—Just anterior to the hymen, or the carunculae myrtiformes, will be found on each side a little opening, sufficiently large to admit a small probe or bristle. This opening leads through a canal three-fifths of an inch long, which is the excretory duct of a conglomerate gland which has received the name of vulvo-vaginal gland. These glands are found, one on each side of the ostium vaginæ, between the vagina and the ascending branch of the ischium, from which they are distant three-tenths of an inch, and lie in contact with the transverse artery of the perineum. The fact that they are separated from the vagina by an aponeurotic prolongation, lie between the superficial and middle layers of the ischio-pubic fascia, and have the unyielding ischium on one side, accounts for the complete confinement of pus forming in them, and its not being discharged by the rectum or vagina. They were described by Duverney, Bartholinus, Morgagni, and their immediate successors, but in time, very singularly, they were forgotten. In 1841, M. Huguier, of Paris, redescribed them fully, and threw much light upon their diseased conditions.

Sometimes, their mouths becoming occluded by adhesive inflammation, their secretion is retained, and they undergo great enlargement and dis-

tention. At other times suppurative inflammation is set up and abscess is the result.

Causes.—The causes of inflammation of these glands are very much the same as those of vulvitis, of which, indeed, this affection is often a concomitant disorder.

Symptoms.—There are heat about the vulva, pruritus, and pain upon touch. The mouth of the duct is red, and the finger pressed over the site of the gland discovers a hard, painful, and perhaps fluctuating tumor about the size of a small hen's egg. Very often the first intimation of the existence of the disease is given by pain during the sexual act, or upon manipulation.

Differentiation.—An abscess of this gland is generally readily distinguished from a cyst by the presence of the ordinary signs of inflammation, or, when cystic distention exists without inflammation, the locality of the round mass rolling slightly under the finger without tenderness will make the diagnosis clear. From phlegmonous inflammation of the labium majus it will be known by its distinct, globular, and limited outline, the former affection being diffuse. Furuncles are entirely too superficial to create confusion in diagnosis.

Course and Duration.—This disease is one of no great moment, and its natural tendency is to recovery. Its usual duration is from two to three weeks, and the inflammatory process may terminate either by resolution or by suppuration. Should the latter occur, the pus may be discharged through the ducts of the gland, or in the furrow between the labia minora and majora. In some cases, however, the gland becomes filled with a honey-like matter, and exists as a cyst for months, and even for years.

Treatment.—When inflammation affects the cyst wall, an emollient poultice or cooling and anodyne lotion should be kept applied to the vulva, and rest should be prescribed until suppuration has occurred. Then, if pain be very severe, the accumulated pus may be evacuated, by means of a lancet, near the mouth of the gland or at any other point where fluctuation is most distinct. If pain be not severe, the evacuation of the pus may be left to nature.

When retention of the contents of the gland has created a cyst unattended by suppuration, or when frequent return of suppurative action renders a radical procedure necessary, it has been advised to extirpate the gland. This is a bloody operation, as the transversus perinei artery is apt to be severed. In all my experience I have never found extirpation necessary, and have practised in its stead the procedure which I shall now describe.

Catching up the mucous membrane over the sac, I cut out with scissors an ellipse. This exposes perfectly the wall of the sac, which is punctured by the tenaculum, so as to allow the escape of a small amount, say one third, of its contents. The sac wall is now lifted by the tenaculum, and an

elliptical piece is cut out of that also. This prevents closure and secures drainage. The cavity is now filled with carbolized cotton, which in thirty-six or forty-eight hours is removed.

Eruptive Diseases of the Vulva.

The skin and mucous membrane making up the vulva may, like the same structures in other parts of the body, be affected by eruptive disorders of various kinds. It is not my intention to enter with any minuteness into the consideration of these diseases, for which I refer the reader to any of the modern works upon dermatology, but merely to note the fact that they may occur upon this part, and mention the leading characteristics of the most frequent of them.

Any eruptive disorder which may elsewhere affect the skin or mucous membrane of the body may show itself on the vulva. The following list includes those which are most commonly met with and most frequently call for diagnosis and treatment:—

- Prurigo and lichen;
- Eczema;
- Acne;
- Elephantiasis;
- Erythema and erysipelas;
- Syphilides.

As is the case elsewhere with prurigo, that of the vulva presents large, scattered papules, very irritating and generally having their apices bereft of cuticle. Lichen shows more numerous papules, which rest upon a thickened and somewhat indurated cutaneous base. Pruritus vulvæ is the most prominent symptom of these maladies. So intense is the irritation of the vulva established by them that vulvitis is the consequence, the disease then being styled pruriginous vulvitis.

In eczema the surface is red, heated, and covered by little vesicles, which breaking, give forth a serous fluid. The eruption confines itself chiefly to the cutaneous surface, the mucous lining being less affected. It may pass off rapidly as an acute disorder, but sometimes there are successive crops of vesicles which exhaust the strength of the patient, in consequence of the nervous excitement and irritability which the disease induces. In many cases of diabetes and vesico-vaginal fistula, this affection constitutes an exceedingly annoying and even painful complication.

Acne consists in engorgement of the sebaceous follicles studding the labial faces; not in active inflammation, which would bring the case under the head of follicular vulvitis, but in engorgement by their own retained secretion.

Elephantiasis of the labia differs in nothing from that of other parts. The affection is very rare. Kiwisch records one case in which both labia increased in size, so as to equal the head of a man, and to fall nearly to

the knees. The parts affected by it are the labia majora and minora, the clitoris, and the perineum.

Erythema and erysipelas are simply accompanied by graver symptoms when they affect the genital organs than when they develop on the skin elsewhere.

Syphilis in secondary and tertiary form may affect the labia, creating hypertrophy, ulceration, and all the evils which it excites in other parts.

These disorders create the ordinary symptoms of vulvitis, and hence they are commonly confounded with it. Pruritus vulvæ is one of their most constant signs, and the itching which it produces often first attracts attention to their presence.

Treatment.—Little need be said here of treatment, for it should be guided by the rules which govern the management of the same cutaneous disorders in other parts of the body. The general health should be carefully attended to; change of air advised; and tonics and alteratives, such as iron and arsenic, prescribed in combination, the first, with colombo, or the second, with the tinctures of cinchona, or gentian. Local treatment should consist in the maintenance of strict cleanliness by bathing the diseased parts freely in tepid water, and the pruritus, which invariably exists and leads to scratching, should be relieved by lotions containing acetate of lead, opium, borax, or a small amount of creasote or carbolic acid.

Phlegmonous Inflammation of the Labia Majora.

The areolar and adipose tissues, which in great degree make up the bulk of the labia majora, are very frequently the seat of inflammation and abscess. The disease is excited by irritating vaginal secretions, vulvitis, direct injury, and the peculiar blood state which results in the development of furuncles and carbuncles.

Symptoms.—In the first stage there is active congestion, which in the second produces hardness and tension from effusion of liquor sanguinis into the areolar tissue. The third stage consists in the breaking down of this mass by the process of suppuration and formation of an abscess. The pus which is thus created is usually very offensive from propinquity to the rectum and vulva.

The diagnosis is generally very easy. Attention is directed to the part by heat, pain, throbbing, difficulty of locomotion, and exquisite sensitiveness upon pressure. Upon physical exploration one labium is found very much swollen and quite hard and tender. Although it is usually easy to distinguish this disease, care must always be taken to differentiate it from labial hernia, displacement of an ovary, pudendal hematocèle, œdema labiorum, and vulvitis. As this point will engage our attention elsewhere, it requires no further mention here.

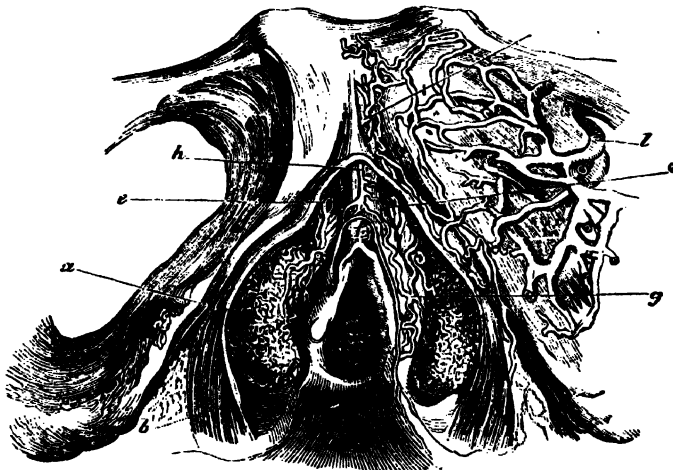
Treatment.—The treatment should consist, in the first stage, in the application of cold and sedative lotions, low diet, saline cathartics, and

perfect rest. One of the best local applications will be found to be the lead and opium wash. As the second stage advances the process of supuration, which is now inevitable, should be encouraged by poultices, and as soon as pus is distinctly discoverable it should be evacuated by puncture. Early opening is advisable, because the tissues obstinately resist natural evacuation, and the accumulation may pass upwards towards the abdominal ring through the dartoid sac.

Rupture of the Bulbs of the Vestibule.

Anatomy.—If an incision be made by a scalpel through the skin and its subjacent adipose tissue, around the vulva, and all the tissues making up that part be dissected off, a reticulated plexus of large veins will be found beneath the labia called the *pars intermedia* and *bulbi vestibuli*. These extensive channels for blood have been represented by Kobelt, as shown in Fig. 39.

FIG. 39.



Plexus of veins of the vestibule. (Kobelt.)

Any influence which causes a rupture of these vessels must produce one of two effects: if there be a corresponding rupture of the skin, a free hemorrhage will occur, known as pudendal hemorrhage; if not, the blood pouring out into the areolar tissue, surrounding the wounded plexus, will soon form a coagulum, constituting a bloody tumor, which has received the name of thrombus or pudendal hematocoele.

Pudendal Hemorrhage.

Especial attention was called to this condition by Sir James Simpson,¹ who, in 1850, recorded from his own experience, and that of others, a

¹ Obstet. Works, vol. i. p. 277, Am. ed.

number of instances in which from a very slight rupture of one labium fatal hemorrhage took place. He declared that criminal cases had repeatedly occurred in Scotland, in which women, both pregnant and non-pregnant, had suddenly died from pudendal hemorrhage, arising from rupture of the bulbs of the vestibule. Suspicion of injury, at the hands of the husbands or neighbors, had been entertained in most or all of the instances referred to.

The accident is a rare one. But two instances have come under my notice, one occurring in consequence of puncture of the labium by a stick, the woman falling in crossing a fence; the other the result of a similar puncture by a piece of china, from the breaking of a pot de chambre. Both these cases readily yielded to the recumbent posture, and the application of cold and styptic compresses. A very interesting case, the details of which I cannot now find, was published some time ago in one of the journals of the day. A lady, standing upon a chair to mount a horse, slipped and fell, so as to cause the sharp extremity of one of the upright pieces to puncture one labium. Bleeding was profuse, and so obstinate as to require several attempts at checking it before it was finally controlled. This was in the end accomplished by a tampon in the vagina and firm compression by a T bandage.

Causes.—The great predisposing causes are pregnancy, varicose condition of the veins, and a large pelvic tumor.

The exciting causes are—

- Great muscular efforts;¹
- Blows rupturing the labium;
- Incisions or punctures.

Symptoms.—The hemorrhage that announces the accident will lead to a physical exploration, which will at once reveal the nature of the lesion.

Treatment.—The nature of the accident being once recognized, the control of the flow will not usually be difficult. If it be not effected by cold and astringents, such as ice, the persulphate of iron, or tannin, the vagina should be filled with a firm tampon of cotton, a folded towel applied as a compress over the vulva, and a T bandage made to press this forcibly against the body. Should this plan fail, the wound should be enlarged by incision and filled with pledgets of cotton saturated with solution of persulphate of iron; then the tampon should be applied in the vagina and a compress carefully adjusted by means of a T bandage. It is difficult to conceive of any case occurring in the non-pregnant woman which could resist this method if effectually employed.

Pudendal Hematocele.

Definition and Synonyms.—The term thrombus, derived from the Greek *θρομβωω*, “I coagulate,” and which is used synonymously with hema-

¹ Prof. Simpson records a case due to straining at stool.

toma and sanguineous tumor, is that which is generally applied to this condition. I have preferred the appellation of pudendal hematocele, given to the disorder by Dr. A. H. McClintock, from its pointing out the similarity between it and pelvic hematocele; which resembles it in pathology, and because the term thrombus is now commonly applied to the coagulation of blood in a bloodvessel.

A pudendal hematocele is a tumor formed by a mass of clotted blood effused into the tissue of one labium, or the areolar tissue immediately surrounding the wall of the vagina.

History.—As early as 1554, the disease was mentioned by Rueff, of Zurich, and in 1647, Veslingius is said by Dr. Merrimen to have noticed it. It attracted the attention of Kronauer, of Basle, in 1734, and subsequently that of Levret, Boer, Audibert, and others.¹ In time it passed somewhat out of notice, until the researches of Deneux,² in 1830, drew attention to it in more recent times. It is generally alluded to by authors only as one of the results of pregnancy and parturition, though it is incontestably proved that it may occur in the non-pregnant and even in the virgin state. Velpeau records an instance in a girl of fourteen years, who had not yet arrived at puberty, and declares as the result of his experience, that “thrombus vulvæ occurs almost as frequently in non-pregnant women as in those who are in labor.” He declares that he has, in the course of one year, observed six cases in the non-pregnant woman; and in his whole experience he has met with twenty instances of the affection.

At the same time that I defer to the statement of so reliable an authority as Velpeau, I must express surprise at it. The accident in the puerperal woman is not very rare, but my experience would lead me to regard it as extremely so in the non-puerperal, since in a practice of twenty-seven years I have met with but four cases. These occurred as direct results of injuries done to one labium by a severe blow, and resembled very closely the same accident which occurs so often around the eye. Another fact which adds to my surprise is this: in connection with this subject I have carefully examined the current medical literature of the day, and, although it teems with reports of this affection as a complication or sequel of labor, I find few reports of instances in the non-pregnant woman. Nevertheless, as I am in this work strictly avoiding the study of the diseased states constituting the complications and sequelæ of labor, I shall specially consider that form of the affection which occurs in the non-puerperal state.

Pathology.—The pathology of this condition is similar to that of pudendal hemorrhage, which has just received notice, for both are results of rupture of the bulbs of the vestibule. In that which we are now considering, the effused blood, instead of pouring away, collects in the tissue

¹ Velpeau, *Dict. de Méd.*, vol. xxx.

² Sur les Tumeurs sanguines de la Vulve et du Vagin.

of one labium, under the vagina, or even in the areolar tissue of the pelvis, and forms a coagulum. It bears to pudendal hemorrhage the same relation which a simple fracture bears to one of compound character.

Rupture of a branch of the ischiatic or pudic artery may, during labor, likewise produce a bloody tumor,¹ but this should not be treated of under the technical head of pudendal hematocoele, for it would really constitute a case of sub-peritoneal hematocoele.

Mode of Development.—When a large vessel has been injured, a tumor, perhaps the size of an orange, is suddenly discovered at the vulva. At other times the tumor is quite small, not larger than a walnut. The extent of the laceration likewise governs the rapidity with which the tumor forms after the injury has been inflicted. In some instances a slight flow slowly continues until compression from the clot checks it. When the accident occurs in the non-pregnant state, the amount of blood effused is generally less extensive than in pregnancy, and is usually confined to the vulva.

Causes.—The causes are similar to those of pudendal hemorrhage, namely :—

- Muscular efforts;
- Blows injuring the labia;
- Punctures by small instruments.

Symptoms.—The symptoms are usually a sense of discomfort, with pain and throbbing, and if the effusion reaches the urethra, there is obstruction to urination. The patient or attendant will often first recognize the fact that something abnormal has occurred by the sense of touch, practised without a suspicion as to the nature of the real difficulty.

*Differentiation.*²—Care must be observed not to confound this affection with—

- Abscess of the labia;
- Pudendal hernia;
- Inflammation of vulvo-vaginal glands;
- Œdema labiorum.

The mere announcement of the possibility of error in diagnosis is all that is necessary, for the physical characteristics, mode of development, and rational signs of these affections are so different from those of pudendal hematocoele, that examination will always settle the point with certainty.

• *Prognosis.*—If the sanguineous collection be small, it will, especially in

¹ Meigs's Treatise on Obstetrics, 5th ed., p. 94.

² I have ventured to use this term in place of "differential diagnosis," giving it the signification which it has in Natural History, instead of that which belongs to it in Mathematics. This use is sanctioned by Worcester; and Agassiz speaks of the "differentiation of species." Its cognate verb is equally necessary and convenient.

the non-pregnant state, generally disappear spontaneously. If, however, it be large, and if the patient have recently been delivered, there are always two dangers to be apprehended. The lesser of these is hemorrhage; the greater, purulent infection through the walls of the cyst, or the formation of an extensive abscess, which may produce the same result. These may follow in the non-puerperal form of the affection, but the danger of both is much less great than in the puerperal, where the vessels of the part are largely distended, in consequence of excessive growth, and where the blood state is one of hydræmia and hyperinosis.

Natural Course.—Should the tumor be left to itself, it may be absorbed in a short time and leave no trace; in five or six days it may burst and discharge; the clot may become encysted, and remain indefinitely in the tissues; or the irritation of the clot may create suppurative inflammation, and abscess of the labium be the consequence.

Treatment.—Should the tumor be small, and not excite much pain, a cooling lotion of lead and opium should be applied, the patient kept quiet, and the evacuations of the bladder and rectum regulated, in the hope that absorption will take place. As soon as evidences of phlegmonous inflammation around the tumor appear, suppuration and discharge should be encouraged by poultices. When the tumor is large, and experiment has demonstrated that it will not undergo absorption, it is advisable to evacuate the blood-clot by incision. This should be done by means of a bistoury, upon the mucous face of the labium majus, the patient being placed under the influence of an anæsthetic. After an incision has been made, one finger should be inserted and the clot turned out of its nidus. If hemorrhages ensue, the sac should be thoroughly washed out with a solution of the persulphate of iron, and pressure exerted. Should this not check it, pledgets of lint soaked in this astringent should be passed into the sac, and, if necessary, counter-pressure exerted per vaginam by a tampon of cotton. In case no hemorrhage should follow evacuation of the cavity, no vaginal tampon should be employed, nor should the empty sac be filled with cotton. A better plan under these circumstances would be to wash out the cavity thoroughly with a weak solution of carbolic acid in water, for the more certain avoidance of septicæmia and of phlegmonous inflammation.

Pudendal Hernia.

Anatomy.—By some anatomists it is stated that the round ligaments of the uterus end in the mons veneris; but this view is incorrect. A more careful dissection traces them through the internal abdominal rings, along the inguinal canals, to the labia majora, where they are lost in the dartoid sacs, described by Broca as passing through these folds. The labia majora are unquestionably the analogues of the scrotum of the male, and the round ligaments correspond to the spermatic cords. Into the inguinal

canals these ligaments are attended by a prolongation of peritoneum which has received the name of the canal of Nuck. This ordinarily becomes obliterated at full term of foetal life, but not always. When it remains pervious, the formation of inguinal hernia is favored.

Definition.—Down one of the inguinal canals, by the side of the round ligament, a loop of intestine, and sometimes a portion of the mesentery, an ovary, the bladder, or the entire uterus, may pass, as inguinal hernia occurs in the male.

The fact that this disease is by no means frequent, makes its recognition the more important, for were the practitioner not aware of the possibility of its occurrence, the intestine might be wounded, under the supposition that the labial enlargement was due to abscess, or distention of the vulvo-vaginal glands.

Causes.—The displacement may be produced by violent muscular efforts, or blows, or falls, as in the male.

Symptoms.—Strangulation of the intestine with its characteristic signs may occur, according to Sir Astley Cooper and Scarpa,¹ although it is very rare. The hernia may usually be overcome by taxis. In one case with which I met, reduction was extremely difficult, and could only be accomplished by prolonged effort. When the intestine becomes prolapsed, no strangulation existing, a sense of discomfort, upon bending the body or even upon walking, directs the patient's attention to the affected part, and leads her to apply to the physician. By him the nature of the case will at once be suspected, from the peculiar gaseous or airy sensation yielded to the touch. Certainty of diagnosis will be arrived at by absence of all signs of inflammation or œdema, the detection of impulse upon coughing, and resonance upon percussion, and the possibility of diminishing the volume of the tumor by taxis and position. There are no very great difficulties attending the differentiation of the disease. The danger is that the possibility of hernia at this point may be forgotten, and deductions drawn without considering it. Although the probability of error be not great, the appalling nature of the accident in which it would result, warrants the relation of the following case, which is illustrative of its possibility. A patient called upon me with the following history: she had had an abscess just below the external abdominal ring, which, after poulticing, had been evacuated by her physician, about a month before the time of her visit to me. After this, she had felt well until a week before, when, after a muscular effort, the pain had returned with all the original signs of abscess, and these had continued, although she had painted the part steadily with tincture of iodine, as she had been directed to do in case of such an occurrence. Being in great haste at the moment, I examined the enlargement while the patient was standing, and under a recent cic-

¹ Scanzoni, op. cit., p. 560.

trix, which was painted with iodine, I discovered what I supposed to be a reaccumulation of pus. As the patient came to me in the absence of her physician, merely for the evacuation of this, I placed her in the recumbent posture, and, lancet in hand, proceeded to operate. But, to my surprise, I discovered that change of posture diminished the size of the enlargement. This excited my suspicions, and I found that a recent hernia had occurred under the old cicatrix.

Treatment.—The patient having been placed upon the back with the hips elevated by a large cushion, or, as is better, by elevation of the foot of the bed or table upon which she lies, the tumor should be grasped, compressed, and pushed up the canal, down which it has descended, until it returns to the abdomen. Then a truss, so arranged as to press upon the inguinal canal, should be adjusted, and worn with a perineal strap, to keep the compress of the instrument sufficiently low down to effectually close the point of exit. Should strangulation have occurred, and return of the prolapsed part by taxis prove impossible, the case will require the surgical operation for that condition, for a description of which the reader is referred to works on general surgery.

Hydrocele.

Definition and Frequency.—This affection, which consists in a collection of fluid in the inguinal canal, around the round ligament, is one of such rarity in the female that its very existence is commonly ignored, and mention of it is rarely made by systematic writers.¹

Anatomy.—It has been already stated that the labia majora of the female are analogous to the scrotum of the male, and that the round ligaments, which are analogous to the spermatic cords, do not end in the mous veneris, as was formerly supposed, but passing downwards enter the labia majora and distribute their filaments within the dartoid sacs, which extend like glove-fingers downwards towards the fourchette. The interesting and valuable article of M. Broca upon this subject will be found quoted at length in Cruveilhier's Anatomy. The peritoneal covering of these ligaments usually extend to the inguinal canals, but occasionally in young subjects it is prolonged through a portion of the canal constituting the canal of Nuck.² In adults this is ordinarily obliterated, and hence the rarity of hydrocele and hernia in the female. Sometimes it remains permanently open, when not only may the intestines descend, but even the ovary may pass down, making an attempt to enter the dartoid sacs and imitate the entrance of the testes into the scrotum.

Pathology.—The affection which we are now considering is the result of excessive secretion on the part of this serous membrane, which, by the

¹ Scanzoni's work upon Diseases of Women contains an account of it.

² Cyclopædia of Anat. and Phys., Supplement, p. 706.

fluid collected within it, is distended laterally and downwards. Should the abdominal opening of such a sac remain pervious, the fluid thus collecting could readily be forced upwards as in the same affection in the male, but if that opening has become impervious, the fluid becomes sacculated and such return is impossible. So rare is this affection that I offer no apology for the introduction of the following instance of it,¹ reported by Dr. E. P. Bennett, of Danbury, Connecticut.

"In an extensive practice of over forty years, but one single case has come under my observation. This case occurred recently in a young married female residing in Putnam County, and was mistaken by a surgeon of some eminence for a case of inguinal hernia, who endeavored to reduce it, but failing to do so, pronounced it adherent, and irreducible, and advised to let it alone. That such a mistake should have been made is not at all surprising, as it was a hydrocele of the round ligament coming down through the inguinal canal, and occupying exactly the place of inguinal hernia, and closely resembling one. She subsequently came under my care, and upon inquiry I learned that about five years since a small tumor had made its appearance, which had slowly and steadily increased in size until it had attained its present size, which was about as large as a turkey's egg. It had not been painful, was not attended with abdominal disturbance, had never receded when recumbent, and gave to the touch a feeling of fluid contents instead of the doughy feel of hernia, and I therefore thought that, whatever it might be, it was not hernia; and, upon closer inspection, I diagnosed hydrocele of the round ligament, although it was not diaphanous. So sure was I of a correct diagnosis that I at once proposed an operation, to which she readily consented; and, with the aid of a professional brother, who coincided with me in my diagnosis, I proceeded to cautiously lay open the sac, when we found, to our great satisfaction, that we had not blundered in our opinion. The serous contents of the sac having been evacuated, I injected it with a saturated tincture of iodine, and she speedily recovered without the supervention of a single unpleasant symptom. This case is only important from its rarity, and the fact that most physicians are not aware that hydrocele can, or ever does, occur in the female; and my object in writing this article is not to record any remarkable achievement in surgery, but to call the attention of physicians to this subject, and thereby prevent mistakes which might be attended with disastrous results."

A pamphlet has been published upon the subject by Dr. Hart, of this city. In it he details an operation for hernia performed in a case of hydrocele from a mistake in diagnosis. The fluid of the hydrocele being evacuated, the wound was closed by silver suture, and the patient recovered. He declares that the disease is mentioned by Aëtius, Paré, Scarpa, Meckel, and Poland.

Differentiation.—The greatest circumspection should be observed before a diagnosis of this rare malady is arrived at. The sense of fluctuation,

¹ N. Y. Med. Record, Nov. 15, 1870.

with entire absence of symptoms of inflammation, the absence of resonance on percussion, and the ordinary signs of hernia, the existence of translucency, and the gradual development of the tumor without pain or constitutional excitement, would all be reasons for suspecting it. But, before ultimate measures are adopted for its cure, a very fine exploring needle, such, for example, as that of the ordinary hypodermic syringe, should be passed in, in order that the contents of the sac may be carefully examined.

Should the character of this fluid not assure us that hernia exists, the smallest needle of the aspirator should be introduced, and all the fluid drawn off. Even where hernia exists, such a procedure has been found to favor return of the sac, and to do no harm by rendering it subsequently pervious.

Treatment.—The diagnosis being made, the treatment should consist in evacuation by means of the aspirator, and, if cure do not follow this, in the injection of tincture of iodine in addition, which may be done by reversing the action of the same instrument.

CHAPTER VIII.

PRURITUS VULVÆ.

Definition.—This affection consists in irritability of the nerves supplying the vulva, which induces the most intense itching and desire to scratch and rub the parts. Although not itself a disease, it is always so important, and often so obscure a symptom, that it requires special notice and investigation.

Pathology.—It has just been stated that it consists in disorder of the nerves supplying the vulva. It matters not whether this be a true neurosis or one secondary to some other pathological state, the great element of pruritus vulvæ is nervous irritability or hyperæsthesia. That it is often excited by irritating discharges and eruptive disorders there can be no question. Whether it ever depends upon idiopathic nervous hyperæsthesia, as some suppose, is doubtful. I have never met with an instance in which it appeared to do so.

Mode of Development and Course.—In the beginning, the irritability and tendency to scratch are sometimes very slight, so as to annoy the patient very little and give her but trifling uneasiness. Sometimes they exist only after exertion in warm weather, upon exposure to artificial heat, or just before and after menstruation. The disorder is aggravated by the

counter-irritation which it demands for its relief. The rubbing and scratching that are practised cause an afflux of blood, render the skin tender and its nerves sensitive, and in time greatly augment the evil by producing a papular eruption. The disease and the remedy which instinct suggests, react upon each other, the first requiring the second, and the second aggravating the first, until a most rebellious and deplorable condition is developed. It would be difficult to exaggerate the misery in some of these cases. The patient is bereft of sleep by night, and tormented constantly by day, so that society becomes distasteful to her, and she gives way to despondency and depression. The itching is generally intermittent, in some cases occurring at night, in others only at certain periods of the day. In two cases that I have met, the patients were free from all irritation except at night, when the disturbance and nervous anxiety became so intense as to prevent sleep, except when large doses of opium were given. Loss of sleep, the use of opium, and the nervous disturbance incident to the disease, often prostrate and exhaust the patient to an astonishing extent.

This disorder is to some degree paroxysmal, any influence which produces congestion of the genital organs aggravating it very much. Lying in a warm bed, sexual intercourse, eating and drinking, more especially highly seasoned food and stimulating beverages, and the act of ovulation, all produce this result. Its duration has no limit; months, and even years, sometimes passing before relief is obtained.

Although the term "*pruritus vulvæ*" is that ordinarily applied to it, it must not be supposed that the irritation is always confined to the vulva. It often extends up the vagina, to the anus, and down the thighs. In pregnant women I have repeatedly known it to spread over the abdomen. It may be asked why such a state should be styled "*pruritus vulvæ*?" These extensions are merely complications of the original malady which really deserves that name, and are due to contamination, by scratching, with an ichorous element which constitutes, as I believe, the prominent exciting cause of the trouble.

Causes.—Every practitioner dreads to meet with an aggravated case of *pruritus vulvæ*, for he knows how obstinate the malady commonly proves. The only reasonable hope of controlling it must rest in viewing it strictly as a symptom, and striving to discover and remove its cause. No fixed prescriptions, however much lauded for their efficacy, should be relied upon. The primary disorder should be sought for and cured, in the hope of removing that one of its results which is most pressing in its demands for relief. Should the case have progressed for some time, it will often be found impossible to decide as to its cause, for the scratching induced by it will frequently establish a cutaneous disorder, the connection of which with the *pruritus*, whether as cause or effect, will be doubtful.

The predisposing causes of pruritus are the following :—

- Uterine, vaginal, or urethral disease;
- Pregnancy;
- Depreciated general health;
- Habits of indolence, luxury, or vice;
- Uterine or abdominal tumors;
- Want of cleanliness;
- Constitutional syphilis;
- Severe exercise in one of sedentary habits.

It will be observed that most of these influences are those which predispose to the development of abnormal secretion by the mucous membrane lining the genital tract. Such excessive and deranged secretion I believe to be in the great majority of cases the immediate, exciting cause of the nervous irritation. That there are other causes, it will be seen that I admit, but to treat this condition successfully, I am convinced that special reference must be had to this element. He who simply keeps in view the local trouble, in the majority of cases will be striving merely against the branches of an evil, the root of which consists in the ichorous material, which bathes and excoriates the terminal extremities of the nerves of the vulva and vagina.

In all the instances of pruritus vulvæ that I have been able to examine early enough to determine as to the etiology, I have found one of the following conditions to exist as the apparent cause of the hyperæsthetic condition of the nerves :—

1st. *Contact of an irritating discharge—*

- Leucorrhœa;
- Hydorrhœa;
- Discharge of cancer;
- Dribbling of urine;
- Diabetes.

2d. *Local inflammation—*

- Vulvitis;
- Urethritis;
- Vaginitis;
- Aphthous ulcers.

3d. *Local irritation—*

- Eruptions on the vulva;
- Animal parasites;
- Onanism;
- Vegetations on the vulva;
- Vascular urethral caruncles;
- Growth of short, bristly hair on mucous face of labia.

Of all these, leucorrhœa is the most frequent cause. This symptom of uterine disorder fortunately produces pruritus only as an exception to a

rule. Under certain circumstances it appears to possess peculiarly irritating and excoriating qualities, which, even when the flow is insignificant in amount, will excite the most intolerable itching. This feature is most commonly observed in the discharge attending pregnancy; and in that of senile endometritis, which covers the vagina with bright red spots, and gives it a glazed look like serous membrane. In an exceedingly obstinate case, occurring in a woman of seventy years, the leucorrhœal discharge was so small in amount that the patient was not aware of its existence, nor did I appreciate its connection with the disorder until I discovered accidentally that the only relief which could be obtained followed the application of a wad of cotton against the cervix uteri. In every case of pruritus the vagina should be carefully investigated for evidence of leucorrhœa, unless some other sufficient cause is apparent. In the same manner the other discharges mentioned may cause nervous irritability in the vulva.

It is not, however, usually vaginal leucorrhœa which produces the result; it is much more commonly due to the discharge arising from cervical or corporeal endometritis, and the obstinacy of these affections accounts to some extent for that of the secondary one.

I have so often found diabetes accompanied by this symptom that I always examine the urine in obscure cases. It is by many attributed to the constitutional agency of the disease. The marked relief afforded by the systematic use of the catheter has led me to think otherwise. My impression is that the pruritus is probably not connected with the constitutional effects of the disease upon the nerves, but with the direct and local influence exerted by the disordered secretion.

Local inflammation, by the discharge which it excites and the itching which attends it, is very evidently calculated to give rise to pruritus; and yet cases thus established are not the most rebellious with which we meet.

Any form of eruption upon or around the vulva may, and usually does, excite itching. Eczema, prurigo, lichen, and many others, may do so here as they do elsewhere, and the natural warmth of the part, formed as it is of folds of tissue and covered by hair which is thickly interspersed with sebaceous and piliferous glands, makes them the more likely to prove active in causing it.

Animal parasites of two varieties may give rise to it, the pediculus pubis and the acarus scabiei. The first excites through irritation a lichenoid eruption, while the second produces scabies, or itch.

One of these causes will generally be found to have given rise to pruritus vulvæ, but it is only in originating the difficulty that it will prove active. Very soon secondary influences, as eruptions, excoriations, ulcerations, and increased discharges, the results of scratching, superadd themselves as auxiliary agents, and keep up the disorder.

Treatment.—It has been stated that the first effort of the practitioner

should always be to discover the disease of which the pruritus is a symptom, and then to endeavor to remove it by appropriate means. Should leucorrhœa be the cause, the uterine or vaginal affection which gives rise to it should be treated. Should an eruptive disorder be found to be the source of the difficulty, the measures which would be advisable for this affection elsewhere developed, laxatives, baths, change of air, tonics, and arsenic, would be equally beneficial here.

But this alone will not be sufficient. While eradication of the mischief is thus attempted, palliative means must be vigorously adopted for the sake of present relief. Should the case be regarded, upon careful investigation, as due to contact of an irritating fluid with the nerves of the vulva, perfect cleanliness should be secured by three, four, or, if necessary, a larger number of sitz baths daily, and the vagina should, at the time of taking each bath, be syringed out with pure or medicated water. The irritated surface should be protected by unctuous substances, or inert powders, such as bismuth, lycopodium, or starch, from the injurious contact, and in case the discharge comes from the uterus, a wad of cotton should be placed daily against the cervix uteri to prevent its escape to the vulva, or, as is better, after a thorough use of the vaginal douche the vagina should be thoroughly tamponed daily with cotton saturated with glycerine to which has been added borax or acetate of lead, two drachms to the ounce. Of this plan, which I should mention does not confine the patient to bed, I can speak in high terms. While it protects the vulva from ichorous discharges, it does not prevent ablution and applications to the point of maximum irritation. A very useful vaginal injection, and wash for the vulva, under these circumstances, is the following:—

R. Plumbi acetatis, ℥ij.
Acidi carbolic, ℥ij.
Tr. opii, ℥j.
Aquæ, Oiv.—M.

This may relieve itching for a time, until removal of the cause of the symptom is accomplished.

In case the pruritus is the result of a local inflammation, this should be treated as elsewhere recommended, by poultices of linseed, potato, or slippery elm, to which have been added a proper amount of lead and opium; or fomentations of lead and opium wash, or poppy-heads may be used in their stead. If vaginitis or vulvitis be present, great relief will often be obtained by painting the lining membrane of the diseased part over with a strong solution of nitrate of silver, or by touching the whole surface very lightly with the solid stick, and then using the tampon of cotton and glycerine.

Should an eruptive disorder be the exciting cause, it should, as already stated, be treated upon general principles. Meantime temporary relief may be obtained by painting the surface of the vulva over with a solution

of nitrate of silver, or the use of the ungt. creasoti, ungt. chloroformi, or ungt. atropiæ of the U. S. Dispensatory. Dr. Simpson advises an infusion of tobacco, and Dr. J. C. Osborn,¹ of Alabama, in an interesting article upon the medicinal use of this drug, declares that he always resorts to a strong decoction of it as a wash for the vagina and vulva in this affection, and for the anus in "prurigo podicis." According to the latter gentleman the local sedative effects of tobacco are very useful in the control of prurigo. My own experience agrees with his.

Although the fact will probably not prove one of practical value, it is certainly one of interest that cases have recently been reported in which smoking tobacco has appeared to relieve pruritus. As an illustration I quote the following: "Mrs. W.,² a woman of nervous temperament, became pregnant a few months after her marriage. In addition to the usual derangement of the alimentary canal, she soon experienced a severe itching all over her body. The skin was of a perfectly normal appearance; the pruritus, however, caused her great excitement and soon produced nervous spasms. For several weeks every possible external and internal remedy was used in vain. A decoction of walnut leaves gave her some relief when in the seventh month of pregnancy. Then a violent pyrosis and neuralgia of the dental nerves supervened. In order to alleviate the latter, she was advised by her husband to try the effect of smoking, when the pain as well as the itching and pyrosis disappeared immediately. Mrs. W. smoked one cigar every evening until she was prematurely delivered by a fright, after 8½ months.

"Fourteen months afterwards, Mrs. W. again became pregnant, and was again affected in the fourth month of pregnancy with pruritus followed by pyrosis. She did not immediately resort to smoking, from the dislike of this habit, until the evil increased, when the smoking of one cigar again rendered her perfectly comfortable."

No local application has acquired a more universal popularity in the treatment of pruritus vulvæ than solutions of corrosive sublimate. The following formula is a good one of its kind:—

R. Hydrarg. bichloridi, ʒss.
Tr. opii, ʒj.
Aquæ, ʒvij.—M.
S. For external use only.

Should eczema or lichen have produced inflammatory action in the skin and subcutaneous areolar tissue, poultices, etc., should be employed, as if local inflammation were the cause of the affection.

While these palliative and curative means are being adopted, sleep should be secured by preparations of opium, or one of its substitutes,

¹ N. O. Med. and Surg. Journal, Nov. 1866.

² Tribune Med., Jan. 31, 1869; Wiener Med. Wochenschrift, No. 22, 1869.

codeine, chloral, hyoseyamus, or chlorodyne. At the same time the general state of the patient should be improved by vegetable and mineral tonics, good food, and fresh air. In some cases more benefit will arise from the use of iron, the mineral acids, and sea-bathing, than from any other means.

In certain cases dependent upon chronic vaginitis, or chronic endometritis which has resulted in vaginitis, the disorder will be found to be rather "pruritus vaginae" than "pruritus vulvae," and under these circumstances the severity of the local and general disturbance may be very great. In such cases I have found great benefit from the frequent use of copious vaginal injections of warm infusion of bran. The patient, in the semi-recumbent posture, with the nates over a tub containing three or four quarts of this, with from six to eight drachms of laudanum, and one to two drachms of acetate of lead dissolved in it, should inject the vagina freely for from ten to fifteen minutes, and this should be repeated four or five times a day. After a short time the soothing and alterative influence which it exerts will show itself so decidedly that less assiduous attention to the disorder will be demanded.

In the same way infusion of tobacco and solutions containing borax, lead, alum, zinc, or carbolic acid will be found to be very valuable remedies. They should be used very freely, and after previous cleansing of the vagina by pure water. One great difficulty in the treatment of the disease consists of the inefficient manner in which vaginal injections are practised by patients. This should be guarded against by explicit directions, and the use of the means suggested hereafter in connection with that subject.

The following prescriptions have obtained a reputation for the treatment of pruritus; and I know by experience that they deserve it:—

- R. Chloroformi, ℥j.
- Ol. amygdalarum, ℥j.—M.
- S. Apply to vulva and outlet of vagina.
- R. Acidi hydrocyan. dil. ℥ij.
- Plumbi diacetati, ℥j.
- Olei cacao, ℥ij.—M.
- S. Apply after washing with cold water.
- R. Lotionis nigri, Oj.
- Sodæ biborat. ℥j.
- Morphiæ sulphat. gr. v.—M.
- S. Apply after bathing the part.
- R. Acidi tannici, gr. c.
- Belladonnæ ext. gr. x.
- Butyr. cacao, q. s.
- M. et ft. supposit. vag. xx.

S. Let the patient place one in contact with the cervix uteri, every night, after thoroughly syringing the vagina.

Where diabetes exists as a cause, the patient should bathe the parts after urination, and be instructed to keep the vulva thoroughly covered and protected by one of the ointments already mentioned.

Where the pediculus pubis is found to exist, mild mercurial ointment should be applied; and for the *acarus scabiei*, sulphur ointment will be found sufficient as a parasiticide.

When the itching is located in the skin of the mons veneris and surrounding parts, rubbing it freely with a moist stick of nitrate of silver is often of great service.

The following prescription I have never employed, but it is highly recommended by good authority:—

R. Zinci sulpho-carbolat. ʒj.

Aquæ destillat. ʒij.

S. After careful bathing use as a wash once or twice a day.

Where short, bristly hairs are found growing from the inner or mucous surface of the labia majora, great relief follows depilation. Each hair should be seized by forceps, the operator using a magnifying glass, and jerked from its place.

Dr. Stevens, of Cincinnati, reports excellent results from the use of undiluted sulphurous acid as a wash applied freely to the vulva. He declares that prompt relief is in that way attainable.

Hyperæsthesia of the Vulva.

Definition.—The disease which I proceed to describe under this name, although to all appearances one of trivial character, really constitutes, on account of its excessive obstinacy and the great influence which it obtains over the mind of the patient, a malady of a great deal of importance. It consists in an excessive sensibility of the nerves supplying the mucous membrane of some portion of the vulva; sometimes the area of tenderness is confined to the vestibule, at other times to one labium minus, at others to the meatus urinarius; and again a number of these parts may be simultaneously affected. It is a condition of the vulva closely resembling that hyperæsthetic state of the remains of the hymen which constitutes one form of vaginismus. In two cases I have seen the whole surface of the vulva, except the labia majora, affected by an excessive sensibility which extended along the urethra.

Frequency.—This disorder, although fortunately not very frequent, is by no means very rare. So commonly is it met with at least, that it becomes a matter of surprise that it has not been more generally and fully described.

Pathology.—It is not a true neuralgia, but an abnormal sensitiveness; “a plus state of excitability” in the diseased nerves. No inflammatory action affects the tender surface, no pruritus attends the condition, and

physical examination reveals nothing except occasional spots of erythematous redness scattered here and there. The nerve state appears identical with that which sometimes develops in the scalp, and on parts of the cutaneous surface. The slightest friction excites intolerable pain and nervousness; even a cold and unexpected current of air produces discomfort; and any degree of pressure is absolutely intolerable. For this reason, sexual intercourse becomes a source of great discomfort, even when the ostium vaginæ is large and free from disease. It is this difficulty which generally first causes the patient to apply to a physician for relief.

Causes.—The predisposing causes appear to be the period of life near or at the menopause, the hysterical diathesis, or a morbid mental state characterized by tendency to depression of spirits. As exciting causes I have found chronic vulvitis and irritable urethral tumors to exist in some cases, but in others no cause whatever has been apparent.

Symptoms.—I have said so much on this subject, under the head of definition, that I have little more to add. The patient applies for relief because the act of sexual intercourse is painful, and because in the sensitive spot there is always a degree of discomfort, which is increased by bathing the part, or even by the friction incident to walking. Upon questioning her, it will be observed that her mind is disproportionately disturbed and depressed by this. In some cases it seems to absorb all the thoughts, and to produce a state bordering upon monomania.

Differentiation.—It should be distinguished from irritable urethral tumor and vaginismus, which will be readily accomplished by inspection and touch.

Treatment.—The treatment of this condition is most unsatisfactory. I have met with a number of cases of marked character, and in not one was complete relief given by treatment. Whether they subsequently recovered I cannot say, but they certainly were not cured while under my observation. In one case, which I saw with Dr. Metcalfe, the sensitive area was the vestibule, and to this we applied nitric acid so as to destroy the mucous membrane completely and followed this up by local sedatives, but to no purpose. In another, which I attended with Dr. Sims, he removed portions of the labia minora and of the vulvar mucous membrane, without success. In another case I dissected off all the sensitive tissue, which was quite extensive. This patient, the wife of a clergyman, left me well, and was greatly rejoiced; but, in six months, I received a letter from her declaring that she was worse than before the operation. The treatment which I would recommend from my experience is this: to send the patient away from home where, in addition to enjoying change of air, scene, and surroundings, she would live *absque marito*; to put her upon the use of general tonics, as arsenic, strychnine, quinine, and iron; and after having cured any local exciting disease, like vulvitis or urethral vegetations or tumors, to make frequent ablutions with warm water and apply sedative

and calmate substances in the form of lotions or ointments. As examples of these, I would mention opium or its salts, carbolic acid, chloroform, belladonna, and iodoform. Sometimes benefit seems to result from strong solutions of alum, tannin, and similar agents.

My observation of the results of caustics and the knife is not such as to inspire me with confidence in them.

Irritable Urethral Caruncle.

This affection has, likewise, received the names of vascular tumor, and irritable vascular excrescence of the urethra.

Just at the edges of the meatus urinarius, and, sometimes, along its walls for some distance, little vascular tumors develop themselves, which render this canal very irritable, and in this way produce a great deal of discomfort.

Pathology.—According to Wedl¹ they consist of hypertrophied papillæ, which, as they enlarge, are accompanied by excessive growth of areolar tissue. They are extremely vascular, capillary vessels of considerable size being found within them, ramifying in transverse sections, very much like the *vasa vorticosa* of the choroid. Dr. Reid,² of Edinburgh, declares that they are richly supplied with nervous filaments. These two anatomical facts account for two corresponding clinical observations, that they bleed very freely and readily, and that they are almost as sensitive to the touch as a neuroma. Savage styles these curious growths “pseudo-angiomata,” and asserts that within them, cystic cavities, probably the remains of urethral glands, are occasionally found, filled with mucus.

Causes.—Of the etiology of this affection nothing is known. It develops in the young and old; the married and single.

Symptoms.—The patient complains of pain upon sexual intercourse, in passing urine, in walking, and upon the slightest contact of the clothing. Sleep is disturbed by these means, and by the increase of sensitiveness engendered by the warmth of the bed. As a consequence, she becomes nervous, hysterical, and greatly depressed in spirits. Her whole thoughts often become fixed upon this one painfully absorbing topic, and a most wretched mental state is at times produced. Of course these grave results occur only in very aggravated cases; but, even in minor ones they are present in slight degree.

Dr. T. F. Cock informed me of a case in which a patient became so much depressed from this cause that she committed suicide, and I have a similar statement of another case from a non-professional source. In the latter, the time had been appointed for removal of the growth when the patient destroyed her life. I should be sorry to leave the impression, that mental alienation of grave character is likely to develop from these little

¹ Pathological Anatomy.

² Simpson, Diseases of Women, p. 276.

growths; it is not. A certain degree of it is very apt to be met with; and, in rare cases, where the suffering is very great, it sometimes becomes excessive. To convey some idea of the amount of pain induced by urination in some cases, I quote the following: "I was told by a shepherd's wife, who had one of these sensitive caruncles at the orifice of the urethra, that, whenever she was obliged to pass water, she was in the habit of going to some distance away from her cottage, in order that she might moan and scream unheard, and not distress her family with the sound of her cries, so intense and intolerable was the suffering which at such times she experienced."¹

Physical Signs.—The patient being placed upon the back with the thighs flexed and the knees separated, inspection shows, at the meatus urinaris, a florid, vascular growth, varying in size from that of a cherry-stone to that of a pigeon's egg. Scanzoni declares that they may grow to the size of a goose's egg. Sometimes, instead of one, quite a number may be found, of small size, extending around the meatus or up the canal. Where the canal itself is invaded, the cases are always very difficult of cure, on account of the difficulty in reaching the morbid developments.

Differentiation.—There are but two conditions with which I have ever known the disease confounded. One is prolapsus urethræ or eversion of the mucous membrane of the canal; the other syphilitic growths of warty character. From the first a careful examination will readily distinguish it, and when the second exists similar developments will be found upon other parts of the vulva. Besides neither of these conditions is nearly so annoying and painful as that which we are considering.

Course and Duration.—It is impossible to say how long these growths will continue to exist when not interfered with. I have known them last for years without continuing to develop, but retaining a small size, and being always excessively sensitive and annoying.

Prognosis.—In case a single large caruncle exist, an almost positive promise of relief may be held out from its removal; but where a number of small, fungous, warty growths surround the meatus and extend up the urethra, cure is extremely difficult, for no sooner are they removed than the morbid process of development rapidly produces more. Another discouraging feature of these cases is this, a nervous hyperæsthesia is engendered by the growth, which lasts long after its removal. It behooves the operator in such cases always to be guarded in his promises, at the same time that he urges interference as the only hope for relief in the present, and safety from increased trouble in the future.

Treatment.—Before operating the patient should be thoroughly anæsthetized and placed upon the back, with the thighs flexed and the knees widely separated. The labia being then separated by an assistant on each

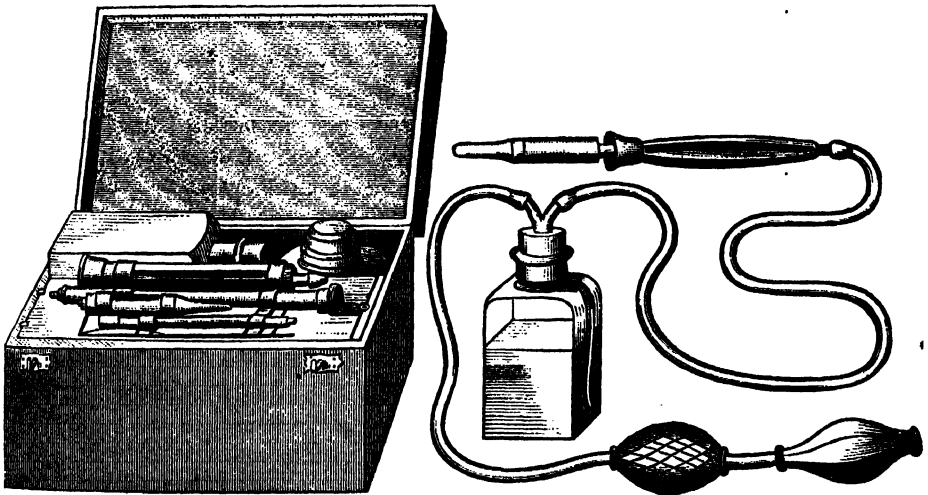
¹ Simpson, op. cit.

side, the tumor should be seized near its base by forceps, pulled towards the operator, and its attachment cut by scissors. Very free hemorrhage may occur. To control this, the raw surface should be wiped dry and thoroughly touched with fuming nitric acid, a stick of nitrate of silver, or the actual cautery.

This operation may be very nicely performed by galvano-cautery, if an instrument be attainable. By this means not only is hemorrhage prevented, the base is also thoroughly cauterized, which is a great safeguard against return of the growth.

Where the urethra has been invaded it should be thoroughly stretched by little retractors introduced within it, and held by assistants, and the growths thus exposed be cut off by scissors, or scraped from their attachments by a steel curette. After removal, their bases should be very cau-

FIG. 40.



Paquelin's Thermo-Cautery.

The apparatus consists of a hollow handle, insulated with wood, to protect the hands from the heat. It is furnished with three movable, hollow, platinum cauterics; into these, after they have been heated to blackness in the flame of a spirit lamp, a blast of benzine vapor is introduced by means of a Richardson's spray bellows, which at once raises them to and maintains them at a state of vivid incandescence. The heat thus produced can be kept up for an indefinite time by slightly compressing the bellows occasionally.

tiously touched with nitric acid, or, what is still better as preventive of return, the actual cautery. A few years ago the actual cautery was an instrument so unmanageable and difficult of employment that it was rarely used for slight operations. Now, thanks to the genius of M. Paquelin, whose instrument is shown above, it is used as easily as the stick of nitrate of silver.

Urethral Venous Angioma.

This is a disease affecting the urethro-vaginal tubercle or anterior half of the urethro-vaginal septum. It sometimes attains large size, and projects between the labia. From irritable caruncle or vascular excrescence it can be differentiated by its want of sensitiveness.

It appears, says Savage,¹ to be due to venous congestion, analogous to that giving rise to priapism.

Its treatment is identical with that of urethral caruncle.

Prolapsus Urethræ.

This accident, which has likewise been described as procidentia and eversio urethræ, consists of prolapse of the urethral mucous membrane, with proliferation of the underlying connective tissue. It is not commonly met with, but at times produces considerable irritation of the urethra and bladder, and leads to an erroneous diagnosis of irritable caruncle. I have met with it only in adults of enfeebled constitution and advanced age; but Guersant, in the *Révue de Thérapeutique*, declares that he has seen fifteen cases in little girls between two and twelve years of age. Diagnosis is easy. A roseate projection encircles the meatus, which is sensitive and liable to bleed. The only diseases with which it could be confounded are, irritable caruncle, urethral polypus, and venous angioma. From all these it can readily be differentiated by careful examination, which shows that it entirely surrounds the meatus, while they do so only in part. The extreme sensitiveness of irritable caruncle is not a differential sign which can be relied upon, for I have seen prolapse of the urethra develop this symptom very decidedly.

It may for some time exist without symptoms, but usually soon creates difficult and painful micturition, pruritus vulvæ, and leucorrhœal discharge.

Treatment.—The simplest method of treatment is to seize the prolapsed circle with tooth-forceps, the patient being anæsthetized, draw it down with very little force, and cut it off with curved scissors. The resulting hemorrhage will readily be controlled by applying a pledget of lint or cotton, saturated with a solution of persulphate of iron, one-third of the full strength, against the raw surface, and making pressure by the finger for some minutes. Should it be deemed necessary to continue it longer, this may be done by a T bandage.

If great vascularity leads to fear of hemorrhage, the ingenious method of Séquin may be adopted with advantage. This consists in introducing a female catheter into the bladder, and ligating the prolapsed part to it so as to strangulate it entirely. The catheter is left in situ until released by sloughing off of the ligated part.

¹ Savage, op. cit.

In one case I drew down the prolapsed tissue, passed a double silk ligature through its base, and tied the two halves. The cure was perfect.

A better operation than either of these would be encircling the prolapsed tissue, which should be well drawn down, by the galvano-caustic wire, removing the mass in this way, and keeping a catheter in the bladder for some days if necessary.

Should obstinate hemorrhage follow any of these operations upon the urethra or vulva, a firm vaginal tampon with a T bandage used so as to press its lowest portion against the bleeding surface will readily control it. The former presses the urethra upwards and the labia outwards, while at the same time it gives a firm, fixed point, against which direct pressure by a T bandage and compress may be made. It possesses more real value than all the other means, usually mentioned for the control of such hemorrhages, combined; such, for example, as Monsell's salt, the actual canterbury, strong acids, etc. The vulva is so exquisitely sensitive that the patient is apt to rebel against these, and in addition they often fail in accomplishing the result.

Coccyodynia.

Definition and Frequency.—This affection consists in a morbid state of the coccyx, or the muscles attached to it, which renders their contraction, and the consequent movement of the bone, very painful. It is of frequent occurrence, numerous cases having been observed, since attention has been called to it, by practitioners who saw it previously without regarding it as a special disorder.

History.—Coccyodynia was first described, in 1844, by the late Dr. Nott. Under the name of neuralgia of the coccyx he described a case which fully embodies the symptoms and treatment of the affection by surgical resource.¹

Although Dr. Nott gave every detail with which we are now familiar, as to the symptomatology and treatment of this affection, the subject was nearly forgotten until the year 1861, when it was again described, almost simultaneously, by Simpson, of Scotland, who gave it its name,² and Scanzoni, of Germany. We have in this another instance, of which so many exist, of the complete oblivion into which a few years may cast a valuable contribution to science. Surely in such a case he who revives what is forgotten deserves as much credit as he who originally made the discovery.

Anatomy.—The coccyx serves as a point of attachment for the greater

¹ N. O. Med. Journ., May, 1844.

² In Prof. Alexander Simpson's edition of Sir James Simpson's posthumous volume on Diseases of Women, the name coccygodynia is used. In his Clinical Lectures, published in Philadelphia, 1863, the name which I here employ appears.

and lesser sacro-sciatic ligaments, the ischio-coccygei muscles, the sphincter ani, levatores ani, and some of the fibres of the glutei muscles. These are thrown into activity by certain movements, as rising from the sitting into the standing posture, the act of defecation, etc., and in such acts the existence of the disorder which we are considering is revealed.

Pathology.—The peculiar pain which characterizes this disease has, according to my experience, a variety of causes; I have removed one coccyx in which a fracture with dislocation, received in early life, which caused it to jut in at a right angle to the sacrum, was its source; another in which, as in Dr. Nott's case, just recorded, caries existed; while in still a third no abnormal condition could be discovered. In such cases as the last, the pain which characterizes it is probably due to a hyper-sensitive state of the fibrous tissues surrounding the coccyx, or of that making up the tendinous expansions of the muscles. This may at times be, as Prof. Simpson has suggested, of rheumatic character; but it appears to me that it is very generally a neuralgic state, due to uterine or ovarian disease, of which coccydynia is a frequent consequence.

As a rule, so long as the bone is uninfluenced by contraction of the muscles attached to it, no pain is experienced, but as soon as contraction produces motion it is excited.

Causes.—It occurs most frequently in women who have borne children, but it is by no means confined to them. I have on two occasions met with it in young, unmarried ladies, and Herschelman reports two cases in children from four to five years of age.

Its chief causes are the following:—

- Blows or falls upon the coccyx.
- Injuries inflicted by parturition.
- The influence of cold and exposure.
- Uterine and ovarian disease.
- Horseback exercise.¹ (?)

In a case mentioned by Courty the patient had the peculiar habit of sleeping with the buttocks uncovered, and the sacrum pressed against the wall. In nine of Scanzoni's cases the condition followed parturition; in five, the use of the obstetric forceps; and in two, horseback exercise was the only cause ascertainable.

Symptoms.—The patient, upon sitting down, rising, making any effort, or passing feces through the rectum, experiences severe pain over the coccyx. In some cases this is so severe as to cause the greatest dread of sudden or violent movement. In others, the patient is unable to sit, on account of the discomfort caused by pressure on the bone. The most trying process is that of rising from a low seat, and, to accomplish this, the sufferer will obtain all the aid that is practicable, by assistance with the

¹ Scanzoni, op. cit.

hands, which will be placed as auxiliary supports upon the edges of the chair or stool upon which she rests.

Differentiation.—The only conditions with which this may be confounded are painful hemorrhoids, fissure of the anus, and a spasmodic condition about the muscles of this part, due to ascarides in the rectum. From these a careful and thorough physical examination will always readily distinguish it.

Prognosis.—Coccydynia often lasts for years, annoying and distressing the patient, but never to any degree depreciating her health or constitutional state. If left to nature it may wear itself out, but it is probable that it would generally remain for a long time if not relieved by art.

Treatment.—Before any plan of treatment is adopted, care must be taken to discover whether the disorder is secondary to uterine disease or anal fissure. If it be so, the primary disorders, and not their results, should receive attention.

If the coccygeal disease be primary, blistering, the use of morphia by the hypodermic method, and the persistent use of the galvanic current will often effect a cure. While they are being tried, the use of iodoform as a rectal suppository may be with advantage employed together with all general means calculated to improve the tone of the nervous system.

Should these means do no good, and the patient's condition demand relief, recourse should be had to one of two radical methods of cure, section of the diseased muscles, or amputation of the bone to which they are attached. The first, placed at our disposal by the late Prof. Simpson, consists in severing the attachments of all the coccygeal muscles; the second, in extirpating the coccyx itself, after the plan of Dr. Nott.

The first operation may be performed subcutaneously by an ordinary tenotomy knife. This is passed under the skin at the lowest point of the coccyx, turned flat, and carried up between the skin and cellular tissue until its point reaches the sacro-coccygeal junction. Then it is turned so that in withdrawing it an incision may be made which entirely frees the coccyx from muscular attachments. The knife is then introduced on the other side so as to repeat the section there. As is usually the case in subcutaneous operations, no hemorrhage occurs unless some large vessel be injured. I have resorted to this procedure but once, when I found it exceedingly difficult of accomplishment, and it proved an entire failure in giving relief.

In fat women subcutaneous section of the muscles attached to the coccyx is by no means so easy a matter as one would suppose who has not made the experiment. Under these circumstances the operation is simplified and rendered more certain by making an incision down upon the coccyx, lifting the exposed extremity of this bone with the finger, and then with a pair of scissors severing the muscles. This procedure is both

easy of performance and certain as to result; that is, supposing that it is resorted to in a case really demanding it.

Should detachment of the muscles fail, as it will do if the bone be diseased, an incision should be made over the coccyx, the bone laid bare by severance of its attachments, and the whole of it removed by a pair of bone forceps, or disarticulated by the knife as practised by Dr. Nott in the case already mentioned. By one of these procedures cure can be confidently promised, and as neither is attended by danger, our resources in this affection may be regarded with great satisfaction.

Many slight cases of coccydynia occur, however, which pass away with time and palliative treatment. The gynecologist should take care that operation is not resorted to too early.

Tumors of considerable size may spring from the external organs of generation. Thus we may have tumors resulting from hypertrophy of the clitoris, or of the nymphæ, lipoma of the labia majora, and cystic tumors of large size growing by a pedicle from the same site. Malignant disease also frequently attacks these organs, where it runs its usual course: differing in nothing from its career in other locations.

We have now considered the most important of the diseases of the vulva. To treat of them all would be to devote a larger space to the subject than a work of this character could afford. Certain important pathological conditions of the hymen would be treated of here were it not that they will receive notice under the head of retention of menstrual blood.

I have usually considered in this connection rupture of the perineum, but as a very obvious advantage, which I feel sure the reader will appreciate, attends having that subject succeed prolapse of the vagina, bladder, and rectum, I have transferred it.

CHAPTER IX.

THE FEMALE PERINEUM: ITS ANATOMY, PHYSIOLOGY, AND PATHOLOGY.

A GREAT deal of the diversity of opinion concerning the propriety of the repair of the ruptured perineum, as well as of the difficulty attending the comprehension and performance of the operation, is, I think, due to an incorrect understanding of the anatomy of this part. While the anatomy of the male perineum has been conscientiously studied, that of the female has been singularly neglected, and this neglect has reflected a

decided influence upon the knowledge of its physiology, pathology, and surgery.

The conventional method of dealing with the anatomy of the female perineum is to pronounce it the floor of the pelvis; the space extending from the inferior commissure of the vulva to the anus, and composed of skin, cellular tissue, aponeurotic union of muscles, and the mucous membrane of the vagina. Tyler Smith begins his remarks upon this subject with these words, "To the obstetrician the anatomy of this part is matter of great interest," and yet he gives such a description of it as I have stated above, and represents it by an illustration showing the union of the sphincters of the anus and vagina, etc. Playfair, in his late excellent work, dismisses the subject, which he pronounces one "of great obstetric interest," with less than eight lines, just three more than Leishman has allotted to it, and four more than it receives in Meadows' Manual of Midwifery.

Upon such topics French writers are usually quite minute and full; but Cazeaux deals with the female perineum, in his "*Traité de l'art des Accouchements*," in three lines and a half, and Joulin does not mention it.

A few words now as to some of our own authors. Meigs, who describes the *fourchette* quite at length, does not describe the perineum at all, nor is any mention made of its anatomy by Bedford, Byford, or Miller.

Obstetric writers may defend this omission by the assertion that they do not write of anatomy but of obstetrics, and that the student should come to them informed upon this subject. Let us, then, turn to the writers on anatomy upon whom our students at present rely. Cruveilhier, one of the most accurate and exhaustive writers upon gross anatomy, after describing quite fully all the external organs of generation, limits his remarks upon the female perineum to an enumeration of its muscles and *asciæ*, saying not one word of its functions, its shape, or its important relation to the pelvic viscera. Wilson and Gray, after enumerating the organs of generation in the woman, say nothing of the perineum. But Holden¹ promises better things. On the middle of a page, in large letters, appear the words, "The Dissection of the Female Perineum;" then follows a study of all the external organs of generation, and nowhere appears one word about the perineum which he started out to dissect, except an allusion to its vessels; and for these the reader is referred to the male perineum.

Even if the plea which I have mentioned were available for obstetrical writers, it would not be so for those upon gynecology, and yet in not one systematic treatise does any description of this organ appear, except in the last edition of my own, and that is, I regret to say, very imperfect indeed. A vast deal is said about the causes of rupture and methods

¹ Holden's Manual, 2d Ed., p. 378.

of cure, but nothing about the mechanics, the physiology, the philosophy, if I might be allowed the phrase, of this important organ, which is calculated to make the student otherwise than superficial with reference to the subject.

So far as my knowledge extends, we owe to Dr. Savage, of London, the demonstration of the fact that the perineum or perineal body is, in the female, a triangular wedge composed of fascia and areolar tissue, which fills the space intervening between the backward curve of the rectum and the forward curve of the vagina. Long before his writing, sections of frozen bodies had been made, showing this anatomical fact; but he, I believe, first named this triangle the "perineal body" and drew our attention to its significance and uses.

The diagram ordinarily employed to convey to the student an idea of the anatomy of the perineum and the relations of the pelvic organs of the female is that represented in Fig. 41.

FIG. 41.

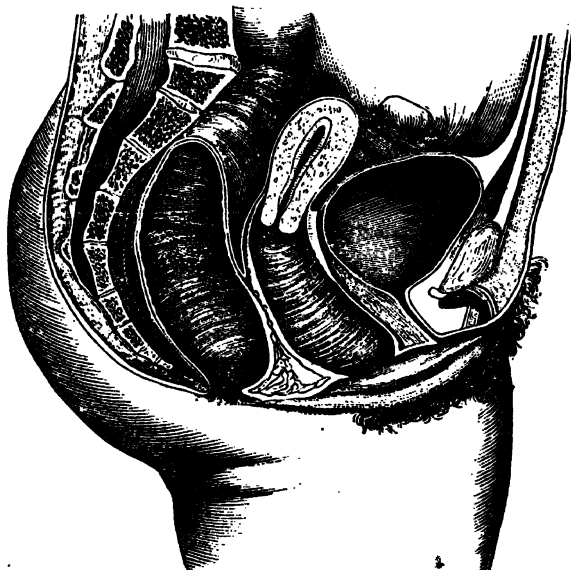


Diagram ordinarily used for representing the perineum.

This certainly portrays a state of things which never exists, unless artificially produced, and distorts the reality to such an extent as to be productive of absolute evil, yet this is the diagram employed by Gray, Wilson, and many others, and even to-day it is quite commonly copied into works dealing with this subject in a special manner.

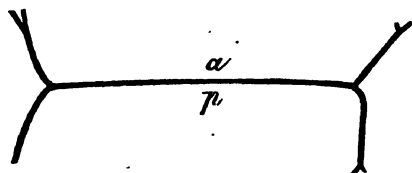
It is, I think, incumbent upon the obstetrical and gynecological writer to give to the student a correct idea of the perineum. It appears to me

that the anatomy and uses of a part should be simultaneously described, if any practical utility is to arise from the description. Present to the student a hypothetical, supposititious diagram of the female perineum—such as that seen in Fig. 41—and one can readily look with charity upon his regarding it as a part of little importance, and pardon the young practitioner who talks flippantly about the triviality of its rupture, and is apathetic at the bedside as to prevention of the accident.

In the living and, indeed, in the dead body, the vagina never gapes, as represented in this diagram, and never so distorts itself unless distended by some foreign body which separates wall from wall. It no more stands distended without some such influence than the urethra does when undistended by a sound or catheter. The normal vagina is a collapsed canal, and its anterior wall rests directly upon the posterior, and is sustained by it. The gentle passage of a small cylindrical speculum, the patient lying upon her back, or of a small Sims' speculum as she lies upon the side, will make this fact quite evident. To the finger gently passed up it is made equally apparent.

Henle has made a study of the vagina by transverse section, and represents it by the following diagram:—

Here the anterior and posterior walls are seen lying directly and closely in contact.



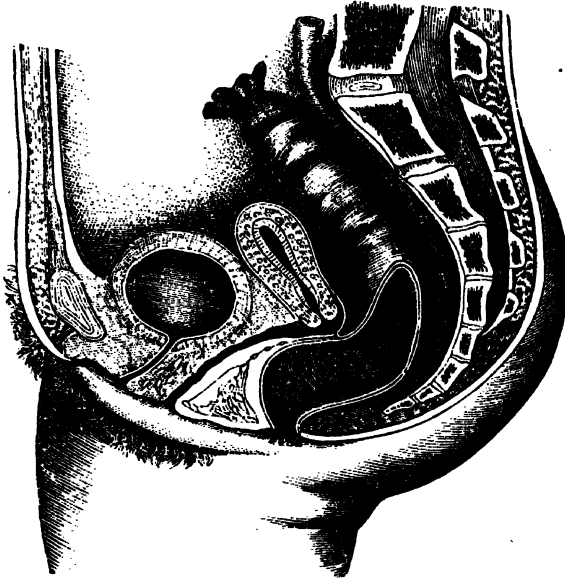
Transverse section of vagina; *a*, anterior wall; *p*, posterior wall (Henle).

Fig. 43 represents my idea of the true relations of the vagina, bladder, uterus, rectum, and perineum to each other. At first sight it resembles closely Dr. Savage's diagram, but examination will show that it differs materially from it in these respects—the uterus is lower in the pelvis, more inclined forwards, and the vagina, instead of consisting of a canal with a single curve from behind forwards, presents a double curve: first, a decided one, from behind forwards, and second, a very slight one, from above downwards and backwards. It is the result of careful observation at the bedside for years, with special reference to this point, and I cannot doubt that every one examining upon the living subject with reference to the position of uterus, bladder, and rectum, and the shape and direction of the vaginal canal which it portrays, must admit its accuracy. One thus examining is apt to regard the perineal body as exaggerated; but the prominence given to this is fully endorsed by Savage, and it must be borne in mind that this represents a perfect and typical organ, unimpaired, as it so often is, by influences which will soon be considered.

Here the perineum is represented in all its importance of function and essential bearing upon the maintenance of a proper relation of surrounding parts. Instead of appearing as a flat surface consisting of skin, areolar

tissue, and tendinous expansion of muscles filling the space intervening between the anus and vulva, it is seen as the "perineal body." Triangular in shape, composed of strong and elastic connective tissue, it is bounded upon its superficial face by the plane ordinarily described as the female

FIG. 43.



Normal relation of the pelvic viscera.

perineum. It is a concavo-convex triangle. Its anterior side, very slightly convex, sustains the inferior wall of the vagina, while its posterior side, decidedly concave, supports the anterior wall of the rectum, which naturally arches forwards to fill its concavity, and prevents its prolapsing into the vagina and out of the vulva.

At its upper portion, the vagina, it will be observed by reference to the diagram, forms a depression which receives the cervix uteri which rests within it, impinges upon the rectum, and is to a certain extent sustained by the shelf-like action of the tissue at the junction of the upper and lower vaginal curves. All this is fact, not theory, and all of it can be verified at the bedside by an unbiased investigator.

If the perineal body just described be regarded merely from a mechanical point of view, as an inactive mass of tissue, its influence in the co-ordination of pelvic support may well be doubted. Let it be remembered that it rests inferiorly upon a set of muscles whose union occurs at the space between the anus and vulva. The contraction of these throws the perineal body forwards and upwards, presses it against the anterior wall of the vagina, and thus makes of it an active agent in giving support. In

some cases this action is so strong as to become abnormal and to cause dyspareunia, or to render coition entirely impracticable. So marked is this at times that the perineal body has to be cut through by the knife to overcome the difficulty.

We are now prepared to appreciate the functions of the female perineum or perineal body; for I feel that the whole triangle must be described as the female perineum, if we ever intend to inculcate true, rational, and reliable precepts as to management of this part during labor, and in reference to uterine displacements. Its functions are the following: 1st, it sustains the anterior wall of the rectum, and prevents a prolapse of this, which would inevitably drag downwards the upper vaginal concavity, and with it the cervix uteri, and destroy the equilibrium of the uterus; 2d, it sustains the posterior vaginal wall, and prevents a prolapse of this, which would allow of rectocele; 3d, upon the posterior vaginal wall rests the anterior, upon this the bladder, and against the bladder the uterus; all of which depend in great degree for support upon the perineal body; 4th, it preserves a proper line of projection of the contents of bladder and rectum, and thus prevents the occurrence of tenesmus, a frequent cause of pelvic displacements.

Remove this triangle, and the relations of the pelvic viscera are liable to grave distortion; as the removal of the keystone of an arch of masonry would effect the same result in the structure which it supports. The change is not immediate or so striking, for there we deal with inelastic and brittle substances, here with elastic and resilient ones; there with parts unattached to outside supports, here with those attached through the areolar tissue of the pelvis to its bony walls. Let me show the keystone action of the perineum by means of two schematic diagrams, which considerably exaggerate its dimensions.

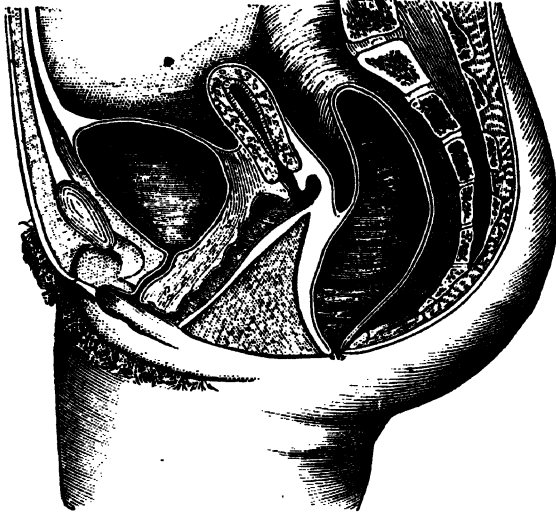
The triangle in black in Fig. 44 represents the perineal body in exaggerated form, and shows its action as the keystone of an arch, the sides of which are made up of the anterior rectal and posterior vaginal walls which rest upon it and are sustained by it. Fig. 45 shows the effect of removal of this. Now no longer do the parts which rest against it receive support, and their immediate tendency is to fall downwards and outwards. I now remove these exaggerated diagrams and show the effect of destruction of the perineal body by others.

As the posterior vaginal wall prolapses, it is followed by the anterior rectal wall; this effaces the superior vaginal depression and drags directly upon the cervix uteri which descends likewise. As the anterior wall descends, it is followed by the posterior wall of the bladder, this to a certain extent by the whole organ, and this, being attached to the uterus, by it likewise.

Previous to the establishment of this abnormal relation of the pelvic viscera to each other, the bladder was, by its apposition with the uterus,

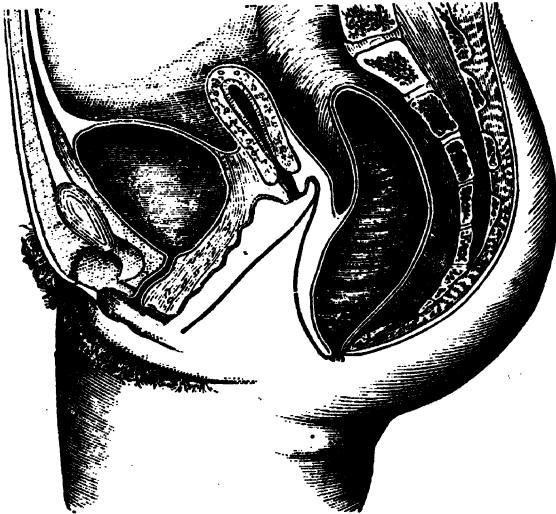
a means of anterior support to it. Now it not only ceases to perform this useful function, but becomes an absolute and direct tractor upon it.

FIG. 44.



Schematic diagram of perineal body.

FIG. 45.

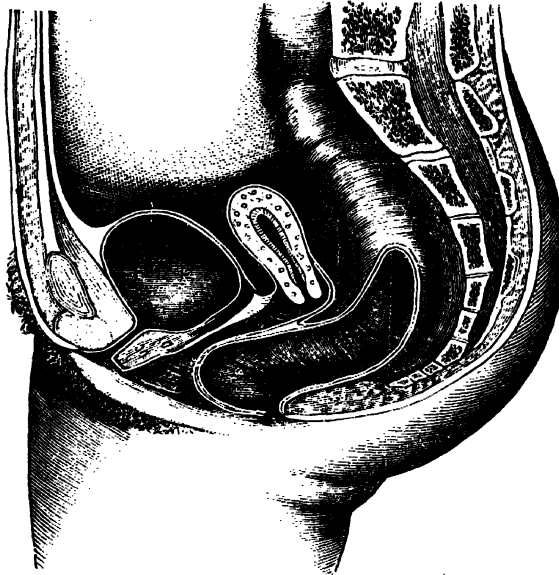


The same, perineal body removed.

It may be objected that the keystone in this case is an inverted one, and that therefore the comparison does not hold good. But this is not a

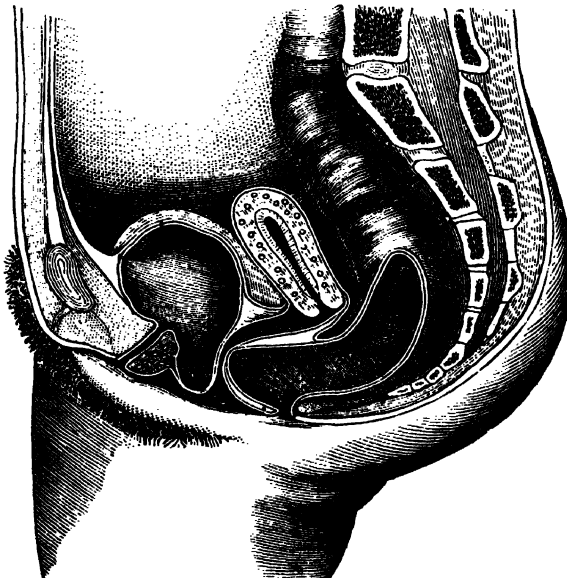
valid criticism, for the inverted keystone is attached above, and therefore has an action which it would not otherwise possess.

FIG. 46.



The perineal body destroyed, the rectal wall descends.

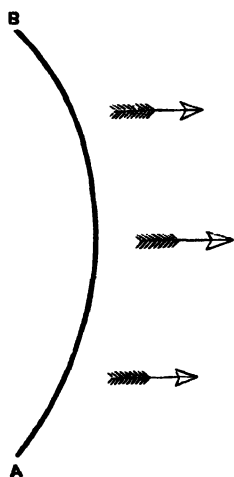
FIG. 47.



The perineal body destroyed, both rectal and vesical walls descend.

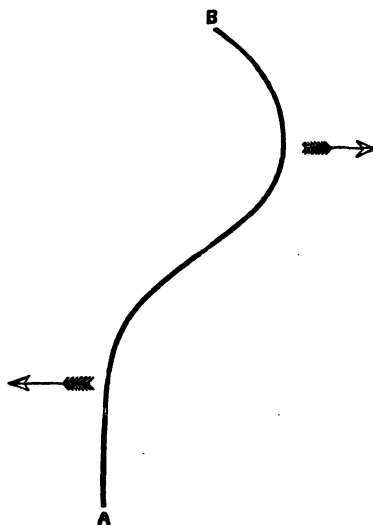
I now proceed to point out another mechanical principle involved in the support of the pelvic viscera and afforded by the anatomical arrangement of these parts. An examination of Fig. 43 will show that the posterior vaginal wall is decidedly concave in its upper half, and very slightly convex in its lower. Let us examine first the mechanism of the upper half, and then of the lower. Take a strip of steel or whalebone (Fig. 48), put one end (A) upon a table, and giving it the shape of the letter C, make pressure upon its upper end B, and the elastic band will always yield in one direction—towards its convex surface—in the direction shown by the arrows.

FIG. 48.



An elastic rod when bent yields towards its convex surface.

FIG. 49.



An elastic rod with double curves yields in opposite directions.

Now change the shape of the elastic strip, so as to give its lower half a slight anterior curve in a direction opposite to that of the upper, and make pressure as before. The upper half will yield towards its convex surface, in the line of the arrows (Fig. 49); but not so the lower. This will yield towards *its* convex surface and in an opposite direction.

Now apply this to the posterior vaginal wall under the influence of pressure. The upper concave portion will yield towards the rectum, and receive support from it and other structures resting in the hollow of the sacrum. The lower, slightly convex portion will tend to fall forwards, and, if the pressure be exaggerated, downwards. But in a normal state of the parts, the anterior vaginal wall and bladder arrest this tendency and the posterior wall is supported.

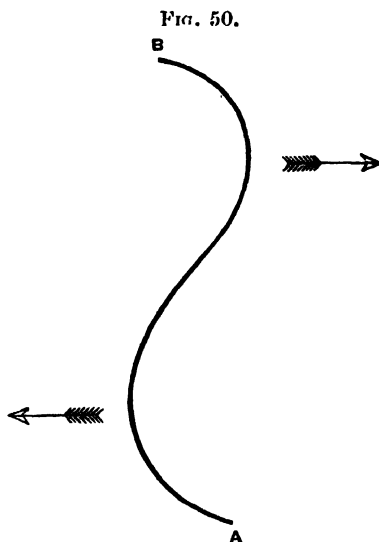
Let us carry this a little further and see what the effect of destruction of the perineal body would be. The condition shown in Fig. 49 is then

greatly exaggerated, an absolute S being created, and the lower portion of that being without support from the bladder, which is no longer in contact with it, prolapse becomes almost inevitable. Fig. 50 will demonstrate this.

But it must not be supposed that gravitation is the only influence which, under these circumstances, disturbs the relations of the pelvic viscera. Two other influences add themselves to those just mentioned to still farther force downwards the anterior and posterior vaginal walls. Prolapse of bladder and rectum distort the line of extrusion of the contents of these viscera, and thus to mere traction upon the parts above, direct expulsive power is brought to bear. And now, too, the uterus, dragged downwards from its position by the heavy vagina and still heavier bladder, adds its weight as an influence calculated to increase the existing tendency to prolapse of all the viscera of the pelvis. It falls downwards, forwards, or backwards, offering an instance of some one of those uterine displacements which we so often meet with, and which cause practitioners so much annoyance and patients so much discouragement.

One approaching the subject in this way is prepared to comprehend the significance of the destruction of this body, and to appreciate the effect which its withdrawal would exert upon the relations of the pelvic viscera. Appreciating the important relation of the little studied and little recognized triangular perineal body, he recognizes in it a wedge turned base downwards and acting as the keystone of an arch upon the integrity of which depends the support of organs which, deprived of its co-ordinating mechanical influence, would tend to fall downwards, bringing with them other parts which they in turn sustain. Let us now inquire what those influences are which commonly disable this wedge or keystone, and render it inefficient and worthless. The perineal body may lose its tonicity and efficiency from the following causes:—

- 1st. From constitutional feebleness.
- 2d. From feebleness the result of prolonged overdistention.
- 3d. From subinvolution.
- 4th. From senile atrophy.
- 5th. From laceration.



An elastic strip, with decided convex curve below, will very decidedly yield in the direction of lower arrow.

In a very few cases, in girls of weak, delicate fibre, the perineal body will, without other assignable cause, be found to be totally worthless and entirely incapable of performing its functions. Such cases are not commonly met with, but they do unquestionably exist, and every practitioner of large experience must have met with them. In such cases, the virgin vagina presents to the finger the characteristics of that which has given birth to children, and not only vaginal walls but perineum are extraordinarily relaxed.

Either in the virgin, the nulliparous married woman, or the multipara, the uterus, from increase of its own weight, or from suddenly applied pressure from above, may become suddenly or gradually completely prolapsed. When such prolapse occurs, and the uterus for a long time remains between the labia, the perineal body, by overdistention, loses its power, and after restoration of the uterus to its place remains entirely enfeebled. This condition is likewise produced by inversion, the presence of a large fibrous polypus, or the wearing of large, globular pessaries.

As utero-gestation advances, not only does the uterus grow with the growth of the fœtus: the vagina, uterine ligaments, mammae, and perineum likewise undergo a physiological hypertrophy, which continues till delivery. After this has taken place, that retrograde metamorphosis, styled involution, may fail in any or all of these parts, which then remain large, lax, and wanting in contractile power. This failure may affect the perineum, in consequence of a laceration more or less profound, and the absorption of septic material subsequently. Or it may occur, as subinvolution of other parts often does, without assignable cause. I am not aware that this condition attracted any attention, as connected with the perineum, until I called attention to it in this work some years ago. As to its existence there can be no doubt, and it certainly produces evil results which are scarcely less striking than those resulting from laceration. The difficulty of accounting for complete loss of power, as evidenced by extreme relaxation of the perineum, will be recognized in the literature of this subject by an attempt to explain the condition by supposing that in such cases the perineal body has been sundered from above without any laceration having been inflicted either upon its mucous or cutaneous surface. This is a very convenient way of solving the problem, but until proof of this theory is given, its validity may well be questioned.

Subinvolution often affects vagina and perineum simultaneously, and although the latter appear to be normal in size, and uninjured by the parturient process, it is found loose, atonic, and feeble. The anterior vaginal wall and bladder sag downwards for want of support, and the posterior vaginal wall and rectum protrude over the ineffectual perineal barrier. Instances of this pathological condition are very common, and uterine displacement, as a result of it, will be frequently seen.

Cases of complete uterine prolapse in very old women, in whom both

uterus and vagina have long undergone senile atrophy, are not by any means rare. Here the uterus does not descend primarily, but an absorption of the adipose tissue, which is stored away around the vagina, and serves as a support for it, occurs as the decadence of advancing age shows itself, and a perineum hitherto strong becomes inefficient and inactive.

Rupture of the perineum may simply be described as a splitting of the perineal body. Laceration in the first degree splits the triangle, one side of which is covered by the vagina, only for a short distance; one in the second degree splits it to its centre; while those in the third and fourth divide the triangle entirely through, and at once remove the keystone from its place in the arch.

Destruction of the power and function of the perineal body, more frequently than anything else, induces anterior and posterior displacements of the uterus and prolapsus in its three degrees. Removal of the perineum does not take away support from the uterus, but it alters the shape and removes the supports of the vagina, and causes it to drag upon and displace the uterus as a direct tractor.

A curious phenomenon, which occurs in about one out of a hundred cases of destruction of the power of the perineal body, while in itself not important, serves to show how markedly the relations of the pelvic organs are in this way impaired. I allude to entrance of air into the vagina. While the pelvic organs are in normal condition, the close apposition of the vaginal walls, already alluded to, entirely excludes the spontaneous entrance of air, and at once expels it if forced in. Let the perineal body be entirely exhausted, however, and certain positions assumed by the woman draw air into the canal, which subsequently escapes with a disagreeably explosive sound. This occurrence has been described¹ under the names of *garrulitas vulvæ* or *flatus vaginalis*, and deserves some attention, in view of the fact that it alarms patients who are at a loss to account for it, and mortifies them by its happening at untoward times.

So intimately are gynecology and obstetrics connected, in reference to this subject, that a few words upon its relations to the latter will not be inappropriate. It is no exaggeration to say that a very large proportion of female diseases take their origin in the mismanagement of the lying-in chamber. If this be so, and no gynecologist will deny it, to the obstetrician the importance of the perineum in this connection cannot be exaggerated. Its rupture furnishes one of the most fruitful sources for the absorption of septic elements, and I do not hesitate to say that thousands of women suffer throughout their lives from uterine displacements, engorgements, and vesical and rectal prolapse in consequence of injuries inflicted upon it during the parturient act. To an imperfect comprehension of the anatomy

¹ See an essay by Löhlein: *Zeitschrift für Geburtshülfe und Gynäkologie*, Bd. v., Hft. 1.

and functions of the perineum I attribute, in great degree, the impression entertained by many practitioners that, in spite of all that is said, its rupture, so long as it does not involve the anal sphincter, is a matter of little moment. This dangerous dogma¹—which, in my mind, renders him who entertains it an unfit person to be intrusted with the grave responsibilities of the lying-in chamber—is always based upon the fact that such a practitioner has seen many périneums ruptured during labor, and even without interference on his part has, to use the common phrase, “heard nothing of them afterwards.” But such a loose method of drawing deductions is hazardous as well as unphilosophical. How do they who draw them know how many cases of septicæmia which have occurred in their practice have been due to the exposure of lymphatics and bloodvessels to the entrance of septic poison, or how many cases of uterine displacement, or vesical and rectal prolapse, treated by themselves or others, have been the remote consequences of perineal lacerations, regarded at the time of their occurrence as of no importance? If septic poisoning destroy his patient, the medical attendant perhaps attributes her death to “puerperal fever,” that hydra-headed monster of the lying-in chamber, which he is satisfied that neither he nor any other practitioner could have prevented. To account for remote troubles occurring years afterwards is equally simple in his philosophy, for has not the patient lifted heavy weights, or fallen, or does not the displaced and congested uterus present sufficient signs of “chronic metritis” to offer this as a scapegoat?

Let us suppose that the perineum has been torn during labor down to the sphincter ani muscle. In this accident the vagina is always torn, though the grave consequences attending that accident when occurring in the upper half of the canal, are here prevented by the intervention of the triangle of dense elastic tissue which exists between the vagina and the rectum. An immediate consequence is the exposure of an extensive raw surface indisposed to heal by first intention, richly supplied with blood and lymph vessels, and quite near to chains of lymphatic glands, intrapelvic and inguinal. Over this surface the flow of an ichorous, fetid, and semi-putrid animal fluid must, in spite of the greatest precautions, steadily pass for from two to three weeks; a fluid consisting of decaying and flaking decidua, disorganized blood, and quantities of muco-pus. The wonder is, not that septicæmia occurs so often under these circumstances, but that so many cases escape it, where everything seems so perfectly arranged to favor it. Let one imagine a wound an inch deep and an inch and a half long, made in the thigh near the groin, or on the arm near the axilla, and bathed every hour of the day with the lochial discharges of a parturient woman! Would he regard the occurrence of lymphangitis, phlebitis, and

¹ See upon this subject an excellent paper in vol. iv. of the Am. Gynecological Society's Trans., by Dr. J. Taber Johnson.

erysipelas as being unlikely consequences? And yet this is what occurs to every lacerated perineum; the wound thus treated being in no manner protected against the evils incident to such exposure.

If cases of decided laceration of the perineum were closely followed up from the lying-in room to the end of life, and all the evils which immediately and remotely arise from this accident intelligently noted, the list would be a long one; all not, of course, showing themselves in every case, but some occurring to one woman and some to another. It may be thus presented:—

- Septicæmia.
- Anterior and posterior uterine displacement.
- Prolapsus.
- Cystocele.
- Rectocele.
- Chronic cystitis.
- Chronic rectitis.
- Uterine engorgement and hyperplasia.
- Subinvolution of uterus and vagina.
- Destruction of power of uterine ligaments.
- Development of a tendency to abortion.
- Impairment of sexual gratification to the male.
- Neuralgia affecting the site of rupture.

Presented thus, this array may appear unnecessarily formidable, but there is not one pathological condition mentioned which practical men will feel inclined to question the occurrence of, as a consequence of puerperal laceration of the perineal body.

As for me, I freely confess that, at the moment of labor, I would rather have a patient sustain a fracture of the radius than a laceration of the perineum down to the sphincter ani. The broken bone would cause pain, sleeplessness, nervousness, and perhaps fever; but it would not expose the patient to the same danger of septicæmia, or of subsequent uterine, vaginal, rectal, and vesical displacement.

A decided laceration having occurred, if the obstetrician be a man who has familiarized himself with the anatomy and physiology of the perineum, it is difficult to understand how he can doubt the propriety of early closure of the wound, both as immediately preventive of septicæmia, for for forty-eight hours, during which the healing process seals together the freshly-cut surfaces, the uterine discharges are innocuous, and as remotely preventive of all the evils which have just been enumerated. Should the operation prove a success, the gain to the patient will be great; if it prove a failure, no evil will have been done.

That there are sources of failure for immediate operation inherent to the condition itself cannot be denied; but equally fruitful sources for it are to be found in ignorance of the anatomy of the part to be repaired, the

performance of the operation hurriedly and without system, and the fact that the obstetrician has cultivated no capacity for surgery.

This question may here be very pertinently asked: If in the non-puerperal state the perineum should be severed completely down to the sphincter ani muscle, would prolapse of vaginal, rectal, and vesical walls necessarily occur? No; not necessarily; though in time probably. On three occasions I have done this for the delivery from the vagina of very large tumors, and to test the question, I have delayed closure of the perineum. In no case did prolapse occur. And why did it not do so when it so commonly ensues upon rupture of the perineum in labor? Because laceration of the perineum during labor or abortion is very commonly the cause of subinvolution of vagina and perineal body. The former remains a large, lax, uncontracting bag; the latter, a yielding, unresisting mass of adipose tissue and skin.

Even after labor, prolapse of these parts does not always ensue upon rupture, even though the sphincter ani and posterior vaginal wall, for some distance up the rectum, be involved. In spite of the accident, involution goes on, the strength of the vaginal walls is recovered, and they are sustained, although their shape and direction are altered, and they lack the support of the perineal body. But such an occurrence as this is the exception and not the rule, and in spite of many such the rule stands unquestionable.

CHAPTER X.

PROLAPSE OF VAGINA, BLADDER, RECTUM, AND INTESTINES.

Prolapsus of the Vagina.

THE remarks made in the preceding chapter being distinctly borne in mind, it will be easy for the student to get a comprehensive idea of prolapse of the pelvic viscera as a consequence of disability on the part of the perineum, and the subject may be dealt with much more cursorily than it could have been without them.

It might upon very valid grounds be maintained that prolapse of the vagina, or rectum and bladder are so intimately connected with prolapsus uteri, that this chapter should have been united with that upon the latter condition. I have especially avoided this course, for the reason that I wish to direct the reader's attention particularly to prolapse of the vagina as a primary condition, one often long existing without uterine descent, and very frequently preceding that state as a causative influence. For any repetition which may occur in the two chapters, I offer no apology, in view of the great importance of both subjects.

Definition and Synonyms.—The mechanism by which the pelvic organs of the female are kept in their proper positions, and relations to each other, offers, in its simplicity and perfection, an excellent example of that adaptation of means to an end which is so often repeated in the animal economy. The uterus is so sustained that when necessity requires it, not only in pregnancy but under a number of other circumstances, it may rise or fall, or tilt backwards or forwards, while the rectum, bladder, and lowest layer of small intestines are kept in place and allowed to distend and empty themselves without material change of relation.

When the tone of the walls of the vagina is impaired and they pouch into its own canal so as to fall downwards towards the vulva, the condition is called prolapsus. As, however, this results in descent of the uterus, small intestines, bladder, and anterior wall of the rectum, it is often included under the names of prolapsus uteri, cystocele, enterocele, or rectocele. As considerable diversity of opinion exists concerning the nature of prolapsus vaginæ, it is necessary for us, before proceeding, to comprehend its definition with perfect clearness. By some it is maintained that hernia of neighboring viscera into the vagina should not be included under the head of prolapsus, which, as Colombat declares, is an “inversion of the internal lining membrane, caused by infiltration of the cellular texture that unites the mucous to the subjacent membranes.” By others it is believed that true prolapse is impossible without simultaneous displacement of one or more of the surrounding pelvic organs. All admit, of course, that in such an exuberant development or hypertrophy as that which occurs during pregnancy, a portion of the canal may be forced out of the vulva, but this is not what is ordinarily meant by the term prolapsus vaginæ. Dr. Savage¹ expresses himself thus upon the point: “Prolapse of the vagina alone, or prolapse of the vaginal mucous membrane alone, are two affections which, anatomically considered, would seem impossible.”

It is an important question whether there can be prolapse of the vagina without rectocele, cystocele, or uterine prolapse. The anterior or upper wall of the vagina is closely bound to the base of the bladder and the front of the cervix uteri, and by means of the utero-sacral ligaments it is indirectly attached to the sacrum. This wall aids in support of the uterus, bladder, and small intestines. The posterior wall is not so firmly bound to the rectum, though the adhesion at the extremity of the utero-rectal pouch of peritoneum is quite strong. At the perineal septum, a point a short distance above the vulva, and just at the upper edge of the perineal body, the muscular walls of the vagina pass off to attach themselves to the ischio-pubic rami. At that point the canal is constricted by the pubo-coccygeus, the true sphincter vaginæ muscle. The mucous mem-

¹ Female Pelvic Organs.

brane of the canal passes down to the fourchette. These anatomical arrangements account for the fact that prolapse of the vagina without simultaneous displacement of one or more of its surrounding viscera is exceedingly rare, and that when it does occur as a distinct disease it is very generally found to affect only the posterior wall. I have met with no case in which the anterior wall has decidedly prolapsed without coincident descent of the bladder, but I have seen repeated instances of prolapse of the posterior wall without alteration of the position of the rectum.

Pathology.—Any influence which impairs the natural tonicity and strength of the vaginal canal, rendering it abnormally voluminous and lax; which alters its natural shape and the incurvation of its walls; or which destroys its lower buttress or support, will tend to induce this affection. As pregnancy and parturition combine most, and often all of these, they very generally furnish both predisposing and exciting causes. The development of the vagina, and increased weight of the uterus dependent upon the former, and the distention of the canal and enfeebling of the sphincter muscle incident to the latter, all unite in favoring prolapsus. As the fibre cells, which constitute the nascent state of the uterine muscular fibres, develop, so as to make of the insignificant non-pregnant uterus the powerful organ which expels the child at full term, so do those of the vagina, the Fallopian tubes, and the uterine ligaments. By the process of involution which diminishes the size and weight of the uterus, these parts likewise return to their original dimensions. Those influences which arrest this important process in the uterus, resulting in subinvolution, likewise affect it in the other parts mentioned, and render them atonic and feeble.

Prolapsus vaginae is very rare, except in those who have borne children, although it may occur. Sir Astley Cooper met with it in a girl, aged seventeen, who was admitted into Guy's Hospital, for supposed prolapsus uteri, and Prof. Meigs¹ mentions that Dr. Mutter, of Philadelphia, saw it occur in a child six months old in consequence of a convulsion.

Causes.—From what has just been said the following causes will naturally suggest themselves as those most likely to produce this displacement:—

Violent efforts of the abdominal muscles;

Repeated parturition;

Senile atrophy of vaginal walls;

Rupture of perineum;

Previous distention by tumors;

Long-continued vaginitis;

Subinvolution of the vagina and perineum.

Of all these causes the last is the most frequent, more especially when

¹ Meigs's Translation of Colombat.

it accompanies, as it often does, partial rupture of the perineum. Next in frequency stand senile atrophy and absorption of surrounding adipose tissue.

It is evident that all act either by debilitating the power of the vaginal walls by mere mechanical distention, by specifically robbing them of their tonicity, or by removing the buttress against which the canal rests at the vulva.

Varieties.—The displacement may be of two forms, acute and chronic. The power of the canal may be overcome by a violent effort, a fit of coughing, uterine or abdominal contractions, or similar acts, which with great suddenness, force the contents of the abdomen down upon the pelvic viscera. This occurrence, which is very rare, is generally accompanied by sudden descent of the uterus, or occurs soon after parturition. The ordinary form of the affection is that in which by the slow and steady action of one or more of the causes enumerated, the resistance of the vagina is gradually overcome, and little by little a fold is forced downwards towards and through the vulva. The first variety is the result of a few minutes' efforts; the second, that of months, or even years of morbid action. Prolapse of one wall, partial prolapsus, as it has been styled, is often lost sight of in view of the hernia of the bladder, rectum, or small intestines, which accompanies it. Hence cystocele, rectocele, and enterocele may be regarded as complications of the affection.

Course, Duration, and Treatment.—A sudden attack of prolapsus being overcome by proper means, and the patient kept quiet, may disappear, and not return; but in that variety which occurs gradually there is no limit to the duration of the disease. Generally, the physician is not called until it has existed for a long time and become chronic. The most important results of the condition are prolapse of the uterus, bladder, and rectum, one or more of which are almost sure to ensue.

Prognosis.—The prognosis as to cure will depend upon the degree and duration of the malady. It is always, whatever be its extent, susceptible of considerable relief by surgical means, but generally proves incurable by those of medical character.

Symptoms.—Should displacement of the vagina exist alone, that is, without creating hernia of surrounding organs, the patient will complain of a sense of discomfort in the vagina, with a tendency to bearing down, as if to expel some foreign body; a feeling of heat, fulness, and throbbing of the vulva; a certain amount of pelvic uneasiness in walking or making any muscular effort, and a tendency to become fatigued, if the condition be one of aggravated character. Physical exploration will reveal the presence of a tumor between the labia, which touch will demonstrate to contain no liquid, and yet not to be solid in its nature. Sometimes the mucous membrane covering it is excoriated, ulcerated, and purple in color; at other times it will be smooth, shining, tough, and covered by pavement

epithelium. A simple vaginal prolapse of any extent is, as has been stated, quite rare. When it does occur it generally affects the posterior wall, but prolapse, accompanied by hernia, is more commonly found to affect the anterior wall, cystocele existing. Should the case be complicated by vesical or rectal prolapse, the symptoms just enumerated will present themselves with the addition of others dependent upon disturbance of the functions of the part which forms the hernia. In one case the prominent symptoms will point to the bladder; in another, to the rectum; and, in very rare instances, to the small intestines.

As the treatment of prolapsus vaginae is, with slight modifications, the same for uncomplicated and complicated cases, it will be considered after the subject of vaginal hernia has been discussed.

Cystocele, or Prolapse of the Bladder.

Cystocele, or vesico-vaginal hernia, consists of descent of the bladder towards the vulva, so as to impinge upon the vaginal canal. When the anterior wall of the vagina, which is closely adherent to the bladder, the base of which it in part sustains, ceases to afford the required resistance, the bladder, partly under this influence and partly under that of traction, descends and forms a small pouch in the vagina. This is at first very small, but gradually it increases, until at last it forms a decided tumor, which protrudes between the labia majora. The pouch thus created becomes filled with urine, which, in the ordinary act of micturition, cannot be evacuated, from its being contained in a species of diverticulum. This undergoes decomposition, free ammonia is formed, and cystitis or vesical catarrh is established, which annoys the patient by pain, heat, vesical tenesmus, and scalding in urination. Should any doubt exist as to the character of the tumor felt in the vagina, a curved sound or catheter may be passed into it through the urethra for the settlement of the question.

It is an interesting question whether cystocele is ever the cause instead of the result of prolapse of the vagina. It is probable that it may be so in very rare cases, though such a connection between the two affections must be uncommon, since the former generally occurs in women who have borne children, and thus been exposed to influences which tend to diminish vaginal resistance. Scanzoni¹ is convinced that the vesical prolapse is sometimes primary, and due to irregular spasmodic contraction of the fibres of the body of the bladder while the neck remains firm. This forces the urine to the fundus, which dilates and undergoes displacement.

Rectocele, or Prolapse of the Rectum.

Rectocele, or recto-vaginal hernia, occurs in a manner similar to that by which the bladder descends. The posterior wall of the vagina not only

¹ Op. cit., p. 497.

ceasing to give proper support to the anterior wall of the rectum, but dragging it obliquely downwards, this forms a pouch which soon fills with fecal matters. The feces, becoming hard, and, in consequence, irritating, create mucous inflammation and discharge, with tenesmus, obstinate constipation, and hemorrhoids. The tumor thus formed will sometimes equal in size a man's fist, and protruding over the perineum give some difficulty in diagnosis from its size and solidity. This difficulty will at once disappear upon rectal exploration and the use of an enema of ox gall and warm water. In one instance I saw a patient confined to bed for three or four months from one of these sacculated accumulations of feces, under the supposition that cellulitis existed, which by effused lymph had completely blocked up the pelvis. It may be supposed that such an error will rarely be met with, yet the case which I have just mentioned occurred to a practitioner of great experience and ability.

Enterocoele, or Prolapse of the Intestines.

Enterocoele, or entero-vaginal hernia, consists in descent of a portion of the small intestines into the pelvis, so as to encroach upon the vaginal canal. Such a descent usually occurs in this manner: a loop of intestine resting in Douglas's cul-de-sac stretches this serous prolongation, and, advancing between the rectum and vagina, pushes the posterior wall of the latter before it so as to form a tumor at the vulva. In a similar manner it is stated that the intestine may advance between the bladder and uterus and depress the anterior vaginal wall, but this must be rare, as authors of extensive experience assert that they have never met with it.

Enterocoele is not an accident likely to produce evil results unless it occur during labor, when strangulation may take place. Even at this time such a complication is very rare, for the free passage afforded the displaced intestine back to the abdomen will almost always preclude this difficulty. Dr. Meigs¹ relates a case occurring during labor, in which the progress of the parturient process was checked by a large mass of intestines until he succeeded in reducing the hernia. He says, with reason, that in such a case strangulation or contusion was to have been feared.

One very momentous aspect in which these herniæ must be viewed is in relation to puncture of vaginal tumors, occurring during labor, for ascertaining their contents. No such explorative means should be resorted to without careful differentiation of vaginal herniæ of all descriptions, and especially of that of which we have last spoken. The peculiar sensation to the touch, of a tumor filled with air, a resonant sound upon percussion, the detection of peristaltic movements, and careful exclusion of all other forms of tumor which might appear under the circumstances, will serve to avoid error. When it is borne in mind that vaginal tumors

¹ Notes to Colombat on Diseases of Women, p. 211.

are very near the inflated intestines, and that they often yield to the touch an airy sensation, it will be appreciated that great caution is necessary in arriving at a diagnosis. Even when the investigator feels positive in his diagnosis, it is always advisable to test the question by capillary puncture and aspiration. Should an intestine be punctured by the little needle employed, no evil will result.

The following case illustrates the dangers and possibilities of erroneous diagnosis in these cases :—¹

A widow æt. 52, mother of twelve children, the last born twelve years ago. A year since she suffered from prolapsus uteri, which was replaced. Patient presents, on examination, a swelling about three inches long, reddish-blue in color, protruding between the labia majora, covered with granulations and pus. *Diagnosis*—Polypus of the uterus; operation for removal. After suffering severe pain in the abdominal regions for several hours, death ensued. *Autopsy*—In the pelvis was found a half pound of liquid blood. Uterus and ovaries atrophied. A portion of the great omentum and a piece of the transverse colon were carried away with the mass. In the posterior wall of the vagina, was an opening about 5 cm. in diameter. 24 cm. of omentum and 10 cm. of the colon were excised.

Treatment of Vaginal Prolapse and Herniæ.—Should the accident have occurred suddenly, reduction should at once be accomplished, and the recurrence of the displacement prevented by appropriate means. The bladder and rectum being evacuated, the patient should be placed in the knee-chest position, and, the fingers being well oiled, steady pressure should be exerted in coincidence with the axis of the inferior strait, until the prolapsed part is returned to its place. In the case of enterocele already referred to as treated by Prof. Meigs, the patient was placed upon the left side, and taxis being practised, the mass suddenly slipped above the superior strait, into which the next uterine contraction forced the child's head. To prevent a relapse the pelvis should be elevated, the patient kept perfectly quiet, tenesmus, if present, relieved by the use of opium, and the vagina constricted by astringent injections.

But sudden cases of vaginal prolapse and hernia are very rarely met with. It is usually those which have slowly and gradually established themselves that we are called upon to treat, and these are always obstinate and rebellious. The means at our command for overcoming such cases are the following :—

- 1st. Local astringents and tonics ;
- 2d. Development of retentive power of the abdomen ;
- 3d. Supplementary support ;
- 4th. Surgical procedures.

The first of these may be effectual in slight cases, but in those of graver

¹ Centralblatt für Chir., May 3, 1879, p. 303 ; Hosp. Gazette.

character they will prove insufficient. The tone and strength of the vagina may be temporarily restored by the use of injections of large amounts of water medicated with tannin, alum, or zinc, employed night and morning. The patient should be sent during the summer to a watering-place, where sea-bathing and injections of sea-water into the vagina may be employed. A very excellent result will also sometimes follow the use of vaginal suppositories containing one of the astringents mentioned.

Too much stress cannot be laid upon the influence of the abdomen in sustaining the pelvic viscera. An impairment of its force by want of exercise, and the pernicious habit of disabling the power, and impeding the function of the diaphragm and chest muscles, by tight lacing and the wearing of heavy clothing, is one great cause of their displacement. Improvement in this respect, by removal of the depreciating influences mentioned, and recovery of lost power by appropriate exercises, is a matter of great moment. But this will be left for consideration under the head of Uterine Displacements.

Supplementary Support.—In stout women an abdominal bandage with perineal pad, by relieving pressure from above may accomplish a great deal of good when combined with complete removal of all constriction and weight of clothing about the waist. In thin women it accomplishes nothing.

The vaginal pessary, an instrument of decided value in all the displacements of the uterus, does little or no good here. In many cases no pessary which rests upon the walls of the vagina can be retained within the distended canal; in others none can be found capable of resisting the downward pressure; while in all increase of dilatation and atony is effected by them. It is true that for a time apparent good results from them, but the hope to which this gives rise is very generally delusive, and very soon they must be abandoned. The function of a vaginal pessary is to support the uterus; not to sustain the vagina. In some cases an exception will be found to this rule in Cutter's cup pessary or some similar instrument supported by an external attachment. Here sufficient power is afforded for support of the uterus at a high point in the pelvis, which mechanically puts the lax vagina on the stretch and prevents its prolapse together with that of the bladder and rectum. This instrument will be shown in connection with prolapsus uteri.

Surgical Procedures.—Of these there are three which may prove effectual. If a ruptured perineum seem to produce the want of support, the operation of perineorrhaphy may be all that will be necessary. This is described in the next chapter. Should this not be sufficient, colporrhaphy should be performed upon the anterior or posterior vaginal wall, as one or the other seems most at fault; and, should even this not relieve the condition, the remaining wall should be likewise diminished in extent by the same procedure.

Almost all, except the most aggravated cases, which are accompanied by great hypertrophy in the vaginal walls, will yield to these three procedures, alone or combined.

*Colporrhaphy or Elytroorrhaphy.*¹—The idea of constricting the vagina so as to diminish its calibre, and by this to remove the traction exerted by its fall upon rectum, bladder, and uterus, long ago suggested itself to the minds of surgeons. In 1823, M. Romain Gérardin made the suggestion before the Medical Society of Metz, but the operation does not appear to have been essayed, for the writer with a great deal of patriotic zeal states, in a subsequent essay upon the subject,² that “his desire had been to put beyond controversy the origin of the operation, and to preserve for French surgery the priority of its conception, if not of its execution.” While this surgeon was felicitating his country upon the conception of an idea, Dieffenbach, in Germany, and Heming, in England, proved its practicability by absolute performance. Dieffenbach probably operated as early as 1830, as a report of his having done so was published in June, 1831. In November, 1831, the late Dr. Marshall Hall, of England, published a case, in which at his suggestion it had been performed by Dr. Heming, the translator of Boivin and Dugès on the Diseases of the Uterus, with complete success. Subsequent to this period it was performed, with various modifications, by Fricke, Scanzoni, Velpeau, Roux, Stolz, and others; the operation always consisting in “the removal of a band of vaginal mucous membrane and union of the two lips of the wound in such a manner as to diminish the calibre of the vagina. . . . Dieffenbach refers to a great number of women who were completely cured by the procedure. . . . Fricke out of four cases cured three.”³ Judging from these quotations, it appears that the operation has been known and practised for a long time on the continent of Europe, especially in Germany. In England it had not been resorted to up to the year 1865, if we may judge from the statement of Dr. Sims⁴ that, after a discussion upon an essay presented by himself to the London Obstetrical Society in that year, Mr. Spencer Wells called his attention to the operation of Mr. Heming, already referred to, with the assertion that “at least one case had been successfully operated upon.”

The operation, probably for reasons which I shall mention hereafter, had fallen entirely into disuse when Dr. Sims⁵ revived it in 1858, with certain modifications. His operation, which I shall soon describe, differs very essentially from that adopted by his predecessors, and should in

¹ Κολπος or ἔλυτρον, “the vagina,” and ραφή, “suture.”

² Gazette Médicale, 1835, p. 558.

³ Wieland and Dubrisay, op. cit., p. 533.

⁴ Uterine Surgery, Eng. ed., p. 319.

⁵ Uterine Surgery, Eng. ed., p. 308.

justice be regarded as the parent of the numerous, I had almost said innumerable, modifications of it which have since appeared.

It is a mischievous error to describe this operation as one performed for prolapsus uteri. That that displacement is one of the complications often existing as a consequence of prolapse of the vagina is true, but the operation is often necessary when vagina, bladder, and rectum alone are seriously involved. The traction exerted by the descent of these viscera is frequently the cause of uterine displacements of various kinds, and that being removed by the operation, the consequent displacement disappears. But the student must remember that colporrhaphy is the legitimate surgical resource for loss of power and displacement of the vagina. To take a different view is to obscure the subject, and to substitute a purely empirical for a scientific and rational arrangement.

This error is based upon the belief that the vagina is a uterine support, and that its prolapse *allows* of descent of the pelvic viscera; not that it drags them down by its own inherent tractile power. Some writers describe two operations for narrowing the vagina, one for the cure of prolapsus uteri, and another, both being for anterior elytrorrhaphy, for prolapsus vesicæ! This is surely a useless and mistaken technicality. Whatever supports vagina, bladder, or rectum takes away direct traction from the *uterus*, and *allows* other influences, the retentive power of the abdomen chief among them, to keep the uterus in position. Carl Schröder¹ strikes the true key-note of this subject when he declares that "the only circumstances under which we may expect a satisfactory result from this operation are when the vaginal prolapse was the primary one."

Sims's Operation of Colporrhaphy.—The patient, being put under the influence of an anæsthetic, is laid upon a table, upon the left side as for an ordinary speculum examination, and Sims's largest speculum introduced. A curved sound, with forked tenaculum points, is fixed in the cervix uteri and made to cause a fold in the anterior vaginal wall, as shown in Fig. 51.

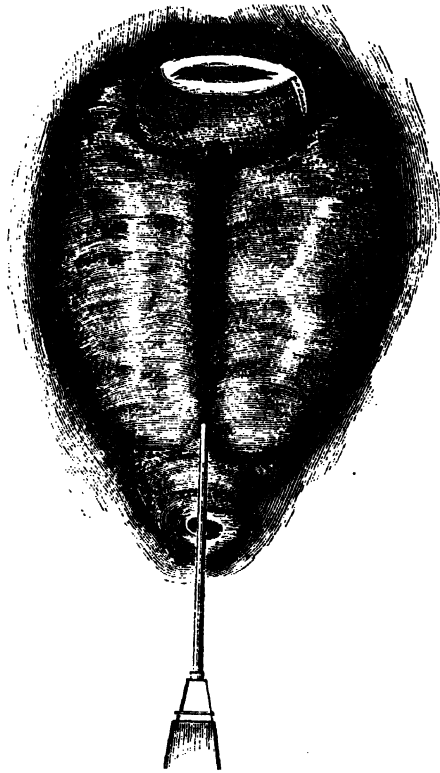
The parts being steadied by this instrument, the operator, by means of two tenacula, folds over the opposite walls of the vagina so as to decide where union is to be effected. Having settled this point, the mucous membrane is hooked up by a tenaculum several lines above the meatus and cut by curved scissors. The tenaculum lifting the piece thus cut, and when necessary being again attached to the mucous membrane, the incision is carried upwards so as to cut out a strip extending to one side of the cervix. Then another furrow is cut in the same manner on the other side.

The sound being removed, and the cervix pulled down by a small tenaculum, the two transverse lines of denudation, shown in Fig. 52, nearly uniting the two arms of the V, are made.

¹ Dis. of Female Sexual Organs, Am. ed., p. 208.

Sutures of silk are then inserted after the plan employed in vaginal fistulæ, and by them silver sutures are drawn into position. The passage of sutures should be commenced at the apex of the triangle and continued upwards.

FIG. 51.



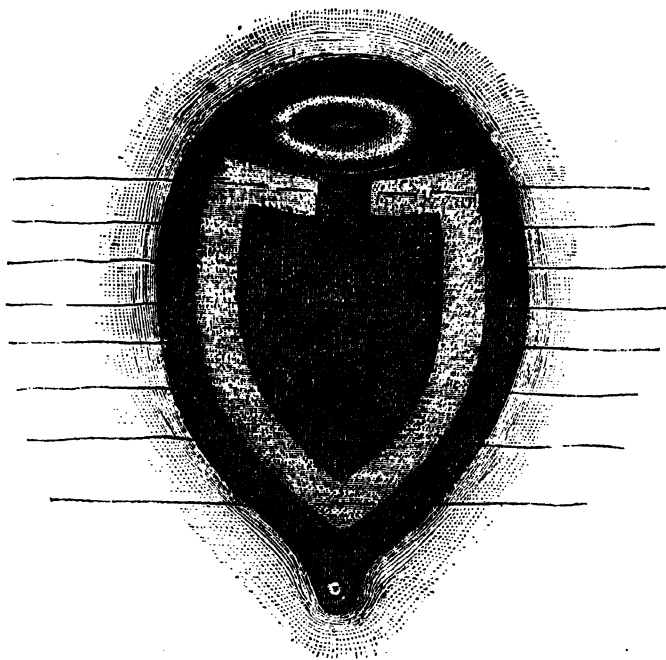
Sims's operation for colporrhaphy. (Sims.)

The after treatment consists in perfect quietude in the horizontal posture, frequent removal of urine by a catheter, and the production of constipation by the use of opium. The lower sutures may be removed in ten days, and the upper in a fortnight. The patient should be kept in the recumbent posture for two or three weeks, and cautioned against immoderate muscular effort for some time afterwards.

Dr. Emmet, finding that the pouch left posterior to the uterine neck by this procedure was sometimes entered by the cervix, improved the operation by extending the transverse denudations so as to make them meet. He has since the introduction of this procedure still further simplified it, in the following manner. At the commencement he catches up with a tenaculum a patch of mucous membrane at the proper distance to one side of the cervix, and snips this out with scissors. On the other side he does

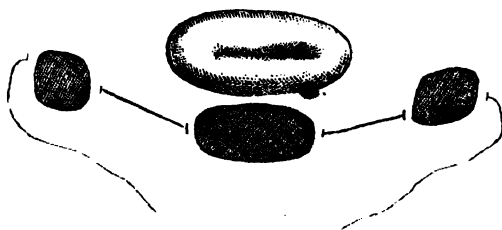
the same thing, and also on the posterior wall of the cervix. He then passes a wire suture so as to bring all these denuded points together, face to face, and twists the wire so as to fix them. The result is that the

FIG. 52.



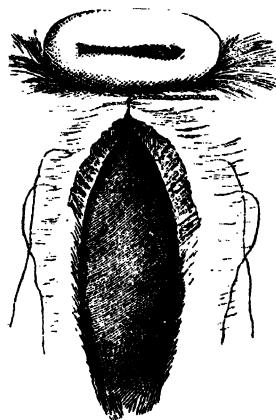
Sims's operation. Shape of denudation and position of uterua.

FIG. 53.



Emmet's operation : first step.

FIG. 54.



Emmet's operation : second step

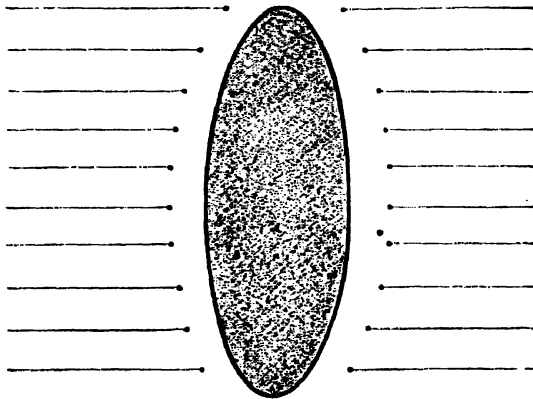
folding of the vagina accomplished by the sound, as shown in Fig. 51, occurs without the use of that instrument. Catching up a piece of mucous membrane on the vaginal fold of each side with the tenaculum, he now

cuts it out and at once passes a suture, and thus he proceeds, step by step, avoiding a great flow of blood, and opposing the abraded surfaces immediately, accurately, and without danger of passing the sutures so that they will not be symmetrical.

As I have already mentioned, there are numerous modifications of this operation, but I shall mention only two more, one for elytrorrhaphy upon the posterior wall, or posterior elytrorrhaphy; the other for the anterior operation.

The peculiarly shaped triangle of Sims is by no means necessary for this operation. Any figure which results in constriction of the vaginal wall will remove traction from the uterus and keep the vagina from prolapsing. Thus Hegar turns the apex of the triangle up, and the base down, while others resort to variously shaped denudations. One of the simplest for both posterior and anterior wall is an ovoid figure, the whole of the extent of which is denuded. This form dates back as far as Dieffenbach. It is shown in Fig. 55.

FIG. 55.



Oval denudation, with sutures passed.

This operation is easier of performance than the two preceding ones, and gives a stronger and more perfect union of tissues which is less likely to yield to pressure. When it is performed upon the anterior wall the patient should lie as in Sims's operation just described; when upon the posterior wall, upon the back, the thighs flexed upon the abdomen, and the lateral walls of the vagina retracted by right angled retractors held by assistants. Simon's operation of "posterior colporrhaphy" is only a modification of this.

Very generally both anterior and posterior elytrorrhaphy are entirely imperfect resources unless combined with perineorrhaphy, and the latter

is often very advantageously united with these under the name of elytrorrhaphy or colpo-perineorrhaphy.

I now proceed to describe an operation which has acquired considerable reputation in France, and which seems to have a future before it. It is that of M. Léon Le Fort, and is thus described by him.¹

"The uterus being entirely outside of the vulva, without reducing it, I make on the anterior wall of the vagina, the patient lying on the back, four incisions, cutting out a portion of mucous membrane which yields me a raw surface about six centimetres long by two wide upon the part nearest to the vulva. Then, lifting towards the abdomen the prolapsed uterus so as to see the posterior face of the tumor, I make on this part a raw surface similar to that on the anterior wall. That being done, I in part replace the uterus so as to bring the extremities of the two raw surfaces in contact where they are nearest the uterus. I then apply on the transverse border three sutures, reuniting longitudinally the anterior and posterior walls of the vagina; I then proceed to the reunion of the lateral borders by passing from each side a silver thread, traversing the border of the anterior freshened surface, then the corresponding border of the posterior freshened surface. A thread being placed in a similar manner on the opposite side and at the same level, it is sufficient to tie these sutures to increase by the apposition of the opposite vaginal walls the reduction of the uterus. This reduction is completed gradually as the sutures are put in place, and, when the two raw surfaces have been united throughout their extent, the reduction is complete. The threads which have served as sutures for the transverse border nearest the uterus, being hidden in the depth of the vagina, are difficult of access when after several days union is effected; therefore it is wise to give to these threads sufficiently great length in their twisted part, in order to seize them easily when they become free after section of the part embraced in these loops."

That the operation of elytrorrhaphy has effected excellent results, there can be no doubt. The journals of the day contain numerous reports of cases successfully operated upon by slight modifications of the methods here described. Its disadvantages are, that it is a very tedious process, difficult of performance for one not familiar with this kind of surgery, and liable to failure even if carefully and thoroughly accomplished. Further than this, it is unquestionable that in a large number of cases expansion of the vagina recurs in time in spite of it. Scanzoni² goes so far as to say that the operation always fails. After employing it thirteen times he says: "From the results obtained in our own cases, we can by no means pronounce favorably on these operations." Courty³ says, in speaking of the operation, "The majority of surgeons to-day regard as useless a method

¹ Le Blond, *Traité Élémentaire de Chir. Gyn.*, p. 496.

² *Op. cit.*, p. 159.

³ *Mal. de l'Utérus*, p. 748.

of treatment, which is likewise not devoid of danger." A reviewer of the *New York Medical Journal*¹ says: "We have now under our charge, a patient operated upon nine years ago by Sims's method; in a year the cicatrices had given way, and the procidentia returned. Three years ago, she was operated on twice by Emmet's method; in little more than a year the bands gave way, and her condition was worse than before, for the vagina was so deformed by the cicatrices that it became impossible to adjust a pessary." I shall not, however, strive to accumulate evidence of this kind; I have offered this merely to sustain my statement that there are certain disadvantages attaching to the procedure.

In spite of all this my experience with the operation, combined, be it understood, with perineorrhaphy, leads me to place a very high estimate upon its merits, and to regard it as meeting a difficulty in many cases for which no other resource is offered either by medicine or surgery.

CHAPTER XI.

SURGICAL MEANS ADAPTED TO RESTORATION OF THE PERINEAL BODY.

THE pathological conditions treated of in the two preceding chapters are so directly connected with loss of power in the perineal body that the surgical procedure adapted to the restoration of that part very naturally comes next under consideration.

I beg the reader to observe that the operative procedure about to be described is not limited to the cure of laceration of the perineum. It is appropriate to the restoration of the perineal body which has lost its power and function from any cause—rupture, subinvolution, senile atrophy, constitutional debility, or prolonged overdistention. The indication is to fill the triangular space created by the anterior curve of the posterior wall of the vagina and the posterior curve of the anterior wall of the rectum with a dense, resisting body, which will fit into the space, support the walls just mentioned, and act as the keystone of an arch which directly or indirectly sustains the bladder, the rectum, the uterus, and the intestines above. This is the comprehensive and broad view which should be taken of the operation, and upon its thorough appreciation and acceptance much will depend which is to follow.

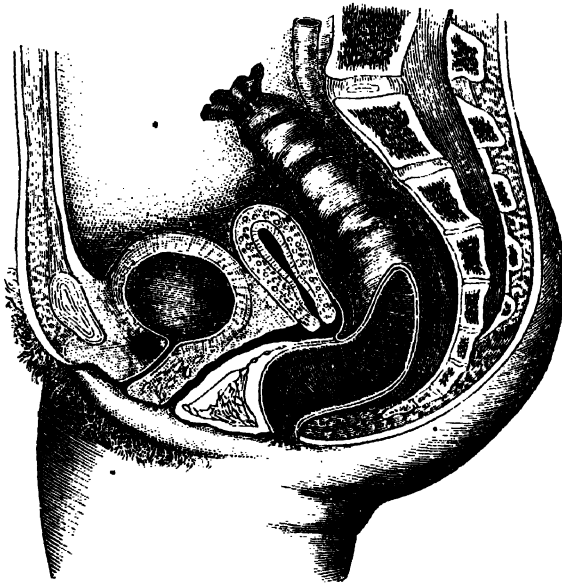
All that is said as to the importance and treatment of destruction of the perineum in this chapter is based upon the facts stated in Chapter IX.

¹ Vol. viii. p. 523.

Before reading this the student is, therefore, urged to peruse that. Without that this would be superficial and imperfect; by its aid it will become much more thorough and comprehensive. In spite of the fulness with which the subject is dealt with there, I deem a slight recapitulation of salient points advisable here. In doing this I offer no apology for repetition of former statements, for I am an advocate of the plan of a popular teacher of the French language who instructs by "*répétition sans cesse.*"

Anatomy.—Proceeding in close proximity with each other towards the pelvic outlet, the vagina and rectum diverge at a point above the perineum; the one arching forwards in coincidence with the pelvic curve, the other slightly backwards towards the coccyx. In this way an irregular triangle is created, of which the base is the skin between the fourchette and anus, one side the posterior vaginal wall, and the other the anterior wall of the rectum. This space is filled by a body, having the union of muscular tendons as its base, and which is itself composed of fibro-elastic tissue. One of its sides resting upon the rectum, the other gives strength, elasticity, and firmness directly to the posterior wall of the vagina; while this wall, being by it pressed against the anterior or upper vaginal wall, sustains it and the bladder which lies upon it. Figs. 56 and 57 will show

FIG. 56.



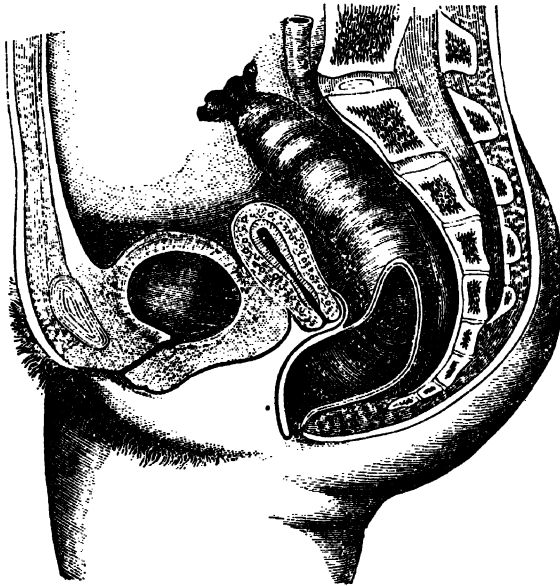
Perineal body perfect; both vaginal walls sustained.

the relations of the perineal body and the effect of its removal upon the vaginal walls. The anterior or upper wall, after its removal by rupture, lacks support and falls downwards, prolapse of this wall occurring, with

cystocele. The normal direction of the posterior wall is also destroyed. Instead of its arching forwards, with a gentle curve, towards the vulva, its lower portion runs like the letter S, to the anus. The result of this change of direction, with the coincident loss of support from the strong, elastic perineal body, is to create a sagging forwards, and soon prolapse of this wall follows that of the anterior, and uterine displacement is a consequence.

It may with some justice be remarked that Fig. 57 represents the perineal body, not simply exhausted but split through, as can only be done by laceration. It is true that in other conditions of loss of power there is an appearance of a perineum left, but it is the semblance of a departed power, and the diagram must, in such cases, to a certain extent, be regarded as schematic, referring to absence of function rather than of tissue.

FIG. 57.



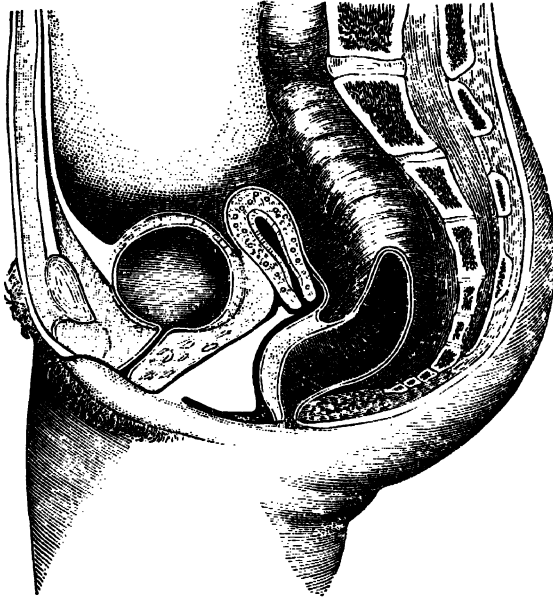
Perineal body removed by rupture; both vaginal walls robbed of support.

When a woman with a normal perineum is placed upon the back, and the finger of the examiner is passed into the vagina, as it passes over the perineal body it will be firmly pressed against the upper vaginal wall. Upon the withdrawal of the finger, the separated walls will be observed to come in contact at once by the rising of the posterior wall. If the perineal body have lost its power, no such upward pressure is found to exist, and the vaginal walls are discovered to be in less close contact.

After operation for restoration of the destroyed perineum, an examination of this kind should be made. If the upward pressure of the perineal

body is found to be sufficient to bring the posterior in contact with the anterior vaginal wall, the object of the operation has been attained. If it do not so, both walls will lack support, in spite of the fact that the superficial perineum, the base of the perineal triangle, has been united and appears perfect. The latter result will deceive the patient, and may deceive the surgeon, with false hopes. The former will alone give future immunity from the dangers of vaginal prolapse and its consequences.

FIG. 58.



Perineum improperly repaired ; perineal body not restored to place ; vaginal walls not sustained.

Those influences which destroy the power of the perineum and render it incapable of its important functions are the following :—

- Constitutional feebleness ;
- Prolonged overdistention ;
- Senile atrophy ;
- Subinvolution ;
- Laceration.

All these, with the exception of the last, have been considered with sufficient fulness in Chapter IX. ; laceration requires more careful study here.

It being now understood that the repair of a perineum the power of which has been destroyed from any of the causes mentioned is to be conducted upon exactly the same principles as those which apply to the operation for laceration, I shall use this accident as a means of illustrating it and confine my remarks to it during the rest of this chapter.

Varieties of Perineal Laceration.—All cases may be classed under two heads :—

Complete and Partial Rupture.

These include the following degrees of destruction :—

Superficial rupture of the fourchette and perineum, not involving the sphincters ;

Rupture to the sphincter ani ;

Rupture through the sphincter ani ;

Rupture through the sphincter ani and involving the recto-vaginal septum.

Complete rupture presents such serious discomforts as a consequence, that partial rupture is by many viewed as a trivial circumstance. So it is by comparison, but so likely is it to be followed by prolapse of one or both vaginal walls that it should never be undervalued. As soon as such prolapse occurs, uterine, vesical, and rectal troubles become almost inevitable.

The evils resulting from partial rupture are by no means insignificant, but they are more remote and more tolerable than those which follow complete. When the sphincter ani is torn through, and still more markedly when the rectal wall is ruptured, incontinence of feces and rectal gases occurs to such an extent as to embitter the life of the unfortunate patient. The consequences of rupture of the perineum may thus be presented :—

Subinvolution of the vagina ;

Prolapsus vaginae with cystocele or rectocele ;

Prolapsus uteri ;

Incontinence of feces and intestinal gases ;

Prolapsus recti.

The first three of these may result from both varieties of rupture, complete and incomplete. The last two attend only the former. Even when the two passages are laid into one, it is sometimes surprising to see how little the patient may suffer ; but generally, under these circumstances, her condition is truly deplorable. Fecal matters and gases pass without control, and the uterus, vagina, bladder, and rectum tend so strongly to descend, that exercise, muscular efforts, or tenesmus produce weariness, pelvic pain, and traction upon the broad ligaments. In some instances, so great is the disturbance of function, that the unfortunate woman finds herself an object of disgust to her associates and even of loathing to her husband.

Subinvolution of the vagina is rarely alluded to as a consequence of rupture of the perineum ; but I see the two conditions too often coexistent to regard it as a mere coincidence. “The muscular walls of the vagina,” says Savage, “are not separable into coats or layers. Two-thirds of the thickness of the vagina, varying from 2–3 lines above to 5–6 below, is made up of this muscular portion ; the inner third consists of a dense.

cellular lining membrane, inseparably united to it." The elastic, contractile elements of this canal are identical in structure with uterine fibre; and development occurs in them as in those of the uterus under the stimulus of gestation. A retrograde metamorphosis likewise affects them subsequent to labor. As this process is often interfered with in the uterus by rupture of the cervix, so is it in the vagina by rupture of the perineum. Let any one appeal to his own experience for the frequency of subinvolution of the vagina as a concomitant of rupture of the perineum. It may be objected that the latter often results from difficult and particularly from instrumental delivery, which may produce both conditions. An examination into the histories of cases will refute this; the result is often produced when the labor has been very rapid and unaided. It may again be suggested that prolapse of the vagina, a consequence of the rupture, excites excessive growth in its walls; but the two things co-exist where perineal rupture has not resulted in vaginal prolapse, almost as often as where it has done so.

Causes.—The power of the perineum may be destroyed by a number of influences, for which the reader is referred to Chapter IX. of this work. For laceration of the perineum there is but one cause—parturition.

Minute details upon this subject, and upon means which should be adopted for prevention, will be found in works upon obstetrics. All that it is necessary to state here is that parturition is the great exciting cause of the accident, and that it is almost never met with in nulliparous women, except after removal of large tumors per vaginam, and then it is usually of little moment.

Prognosis.—In an incomplete case of slight character, where the fourchette and only a small portion of the perineal body are involved, no evil usually results. Laceration of this character and to this extent is the rule in first labors, and not the exception. It requires no interference, and is so insignificant in consequence, that it is not included under the subdivisions which I have mentioned. Even the first and second degrees of laceration which I have tabulated are often productive of no evil, and may, unless careful inspection be made, pass unrecognized by both physician and patient. But this is the exception and not the rule.

The third degree is always an accident of gravity; while the fourth represents the most serious form of the condition. The greater the injury the less likely will be spontaneous recovery, and the more probable the complications and results which have been mentioned.

Natural History of Perineal Laceration.—It is the general impression, and one which I formerly shared, that any laceration which does not entirely sever the sphincter and may unite by first intention without surgical treatment, and that none which converts the two passages into one will do so. Even, however, when the rupture has been complete, it has been asserted that spontaneous cure has taken place. For example,

Peu' once affirmed that he had seen a woman thus injured, and who passed her feces involuntarily, entirely recover. De la Motte declares that thirty years afterwards he met and examined Peu's patient in Normandy, and found that no recovery had occurred. Observation at the bedside has led me to question whether union by adhesion of the lips of these wounds ever occurs spontaneously. Very certain am I that in my own experience I have never seen one do so. Let the limbs be bound together ever so closely, the inevitable passage of lochial material between the cut surfaces prevents union by first intention. Repair is effected by granulation, and is often very good, but it is never perfect. I am not prepared to say that the statement is absolutely and universally true, but I believe it to be so as a general rule, that a lacerated perineum left to nature for repair is never afterwards as perfect as it was before the occurrence of the injury or as it usually is after proper repair by surgical means.

How then is it, it may be asked, that so many women who suffer from laceration of the perineal body do not suffer from the consequences which have been mentioned? First, because, if the laceration does not interfere with vaginal involution, it often does no harm, or at least not for many years, when its connection with displacements is entirely forgotten; and second, because the imperfect repair effected by granulation is commonly sufficient to answer all purposes.

I am fully aware that many will be found who will positively affirm that they have seen even lacerations in the third and fourth degrees entirely repaired by first intention. "False facts," says Cullen, "are more dangerous than false theories." This I strongly suspect, though, as I have stated, I cannot assert, to be one. The ostium vaginae just after delivery is, in its overdistended and always slightly lacerated condition, with folds of redundant vagina pressing down upon it, a most deceptive part. I have myself often been deceived as to serious laceration just after delivery, and I have frequently seen others similarly misled. A prolific field is thus open for error to the superficial and inexperienced examiner, who, having mistaken a slight laceration for one of aggravated character, and finding that repair has been effected by nature, asserts in future that he has known spontaneous recovery even after most extensive destruction of the perineum.

Should the case really be a serious one, however, and the practitioner one who believes that nature will in all probability repair the accident and restore the perineal body to its important functions, a golden opportunity will be lost, and the patient in all likelihood remain a sufferer in consequence.

Time for Operation.—Upon this point authorities differ widely, some urging immediate action, some advising delay until the effects of parturition have entirely passed away, while others compromise the matter by

¹ Velpeau, *Traité de l'Art des Accouchements*, vol. ii. p. 639.

giving preference to the plan of waiting a few days only. To the first class belong Baker Brown, Demarquay, Scanzoni, Simon, and others of equal weight. Scanzoni thus clearly points out the advantage of early interference: "The operation should be performed just after the delivery, because it is more likely that the bleeding lips of the wound will then unite, and because, vivification of the edges not being necessary, the procedure is simpler and less dangerous." The worst cases of the accident with which we meet generally follow instrumental or manual delivery, and when the discovery of its occurrence is made the patient will usually be in a profound anæsthetic sleep. Every operator should be prepared, under such circumstances, to attempt repair of the injury, for, if he succeed, the patient will be saved much suffering, while failure will not in any wise depreciate her condition. For this reason no case of obstetrical instruments should be considered complete which has not in it needles and sutures for performance of this operation. I have commonly resorted to immediate operation, and the result of my experience leads me always to adopt it, unless the sphincter ani and recto-vaginal wall be so profoundly implicated in the laceration as to make the operation a serious and lengthy one, or necessarily to insure the passage of lochial discharge between the lips of the wound. Among those who are opposed to immediate interference are Roux and Velpeau; while Nélaton, Verneuil, and Maisonneuve advise delay for a few days, when all hemorrhage will have ceased and the edges of the wound be covered by granulations.¹ There are three circumstances which tend to defeat the success of immediate operation. First, it is often performed by one not habituated to its performance; and, being practised upon a woman who, having just been delivered, is exposed to the danger of post-partum hemorrhage, and surrounded by anxious friends, it is likely to be finished too hastily. Second, the lochial discharge, constantly passing over the lips of the wound, is very likely to enter and prevent union. Third, the operator having been taught to regard the perineum as the superficial layer of tissues intervening between the fourchette and anus, closes this by correspondingly superficial sutures, leaves the upper portion of the perineal body open, creates a pouch for the accumulation of putrefying materials, and leaves the anterior vaginal wall and bladder without support in the future.

My advice and practice with regard to this point are decidedly to give the patient the benefit of the doubt and to close the rupture at once. If failure follow, however, never, unless there be some special reason for so doing, attempt another operation before the results of parturition have entirely passed away. This will not be before the lapse of two months from the time of delivery; just after delivery there is a reason for operating which has passed away in a fortnight.

¹ Wieland and Dubrisay, French Trans. of Churchill on Dis. of Women.

As I have elsewhere already remarked, it is my conviction that a very large number of cases of uterine disease take their origin in the lying-in chamber, and a large proportion of these in unrepaired cases of lacerated perineum. When immediate operation becomes the rule of obstetric practice, the number of cases of disease thus occurring will at once and very decidedly diminish.

But the full results of immediate operation will never be exhibited until the obstetrician studies the anatomy of this part, and learns how to approximate its entire divided surface by sutures carried up to the highest point at which solution of continuity has occurred.

Treatment of Cases which have Cicatrized.—The operation which is now generally adopted in these cases, and which has received the name of perineorrhaphy, consists in vivification of the edges of the lips of the wound and their approximation by sutures. Although the accident for which this procedure is instituted was described by the ancients, no surgical means of cure were ever advised for it until the time of Ambrose Paré. He advised the suture, and was followed in its use by his pupil Guillemeau. Subsequently it was employed by Delamotte, Saucerotte, Trainel, Noel, and others. Dieffenbach employed it successfully, adding to the operation oblique lateral incisions involving the skin and areolar tissue, for the purpose of relieving tension upon the parts brought together by suture.

About the year 1832, Roux, of Paris, obtained the most brilliant results from the operation, and probably its elevation to the position of a reliable surgical procedure was due more to his achievements than to those of any other individual. He employed the quilled suture, and cured by it four out of the first five cases operated upon. Although such success was obtained in France at this period, we find English writers, as late as 1852 and 1853,¹ doubting the efficacy of sutures, and advising that assistance should be limited to aiding the efforts of nature. Of late years great advances have been made in the operation by Mr. Brown in England; Verneuil, Laugier, Demarquay, and others in France; Langenbeck and Simon in Germany; and Sims, Emmet, Agnew, and others in the United States.

To no department of gynecology does there attach more surgical rubbish which needs a thorough clearing away than to perineorrhaphy. It has afforded a fruitful field for attempts at originality and innovation; successive investigators too often seeming to strive not so much for simplicity as for some peculiarity of procedure which they could call their own. Stripped of this, the operation is a simple one, and, under the influence of advancing anatomical knowledge, has reached a point at which operators may stand in unison. Among the methods which I think should at present be cast aside as effete material, I would cite the use of the quill

¹ Baker Brown, *Surgical Diseases of Women*.

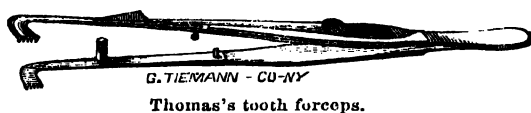
suture, cutting the tissue alongside of the perineum, cutting the sphincter ani, dissecting flaps from the neighboring cutaneous surfaces, and many others. Let the operator fully understand what he sets out to accomplish, which is by no means always done in a surgical procedure, and he will readily appreciate that the simplest, easiest, and surest method of doing this is the best. Let him, on the other hand, have in his mind a dim, uncertain knowledge of what he desires to accomplish, and let him fill his mind with the details of the special plan of this or that operator, and he will be led to adopt complicated and uncertain procedures.

In description I shall adhere to no one particular and exact method, but describe that combination which I have selected as best in my own practice.

Preparation of the Patient.—The general health should be carefully investigated. If it be bad, the operation should be delayed, and the patient put upon tonics and placed under the best hygienic circumstances. For a week before operation, the bowels should be kept lax by some mild cathartic, in order that after that time cure shall not be jeopardized by the coming down of scybala, which have not been removed by a cathartic given twenty-four hours before operation. This point is one of a great deal of moment, and should not be overlooked. In cases of complete rupture it is better even to give a fortnight to the fulfilment of this indication. A compound cathartic or compound aloetic or rhubarb pill may be given every twelve hours, or a saline cathartic at the same intervals. Free alvine evacuation, not hypercatharsis, is what is required. During this time the vagina should every night and morning be thoroughly syringed out with warm water to remove secretions and quiet local irritation.

Instruments and Appliances needed.—These will consist of a long handled curved scissors; a bistoury with narrow blade; a tooth forceps and

FIG. 59.



Thomas's tooth forceps.

FIG. 60.



Slightly curved scissors.

tenaculum; one dozen small sponges (size of a walnut), fixed in handles ten inches long; artery forceps; silk ligatures; and straight darning needles, threaded with silk, which is double and tied at the eye of the needle by as small a knot as possible. A basin of water should be in readiness to

receive the bloody sponges, and a pitcher, bucket, or other reservoir at hand to supply more when this is to be changed. The instruments should be kept immersed in carbolized water, with which the parts should be freely bathed.

FIG. 61.



Emmett's scissors sharply curved.

Operation for Partial Rupture.—It is a matter of great surprise to me that no distinct separation should be made by writers between the descriptions of operations for partial and complete rupture. The first is a procedure in which the merest tyro should succeed. The second is one of the most delicate and uncertain operations in gynecology, in which even the most skilful may fail. I feel sure that evil has arisen from confounding a simple and difficult procedure, and shall make a wide difference between them.

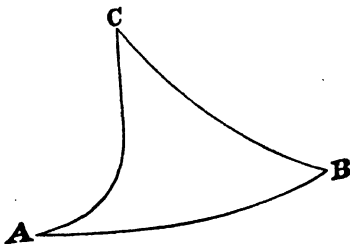
The operation for partial rupture has for its sole object the restitution of the perineal body. That for complete rupture has for its main object the restoration of the power and functions of the sphincter ani. After the main object of the second operation has been attained, that of the first should claim attention.

Before describing these operations, I would say a few words upon division of the sphincter ani. I have operated a great many times for rupture of the perineum, and cannot recall a case of final failure; thus far I have never cut the sphincter. My experience, confirmed by that of many others, leads me to indorse Dr. Savage's statement,* that "the success of operations for the closure of perineal lacerations is obviously not promoted by the division of the superficial anal sphincter."

Let the operator keep clearly in mind the shape and dimensions of the body which he is about to restore. It is a triangle with apex above and base below. Two surfaces of this shape are to be vivified and held face to face by sutures. That is the whole operation.

First part of the Operation.—The patient, dressed for bed, should be placed upon a table before a window admitting a strong light, in the position for lithotomy, and put under the

FIG. 62.



Profile view of perineum. *A C*, rectal wall. *A B*, cutaneous surface. *B C*, vaginal wall. (Parvin.)

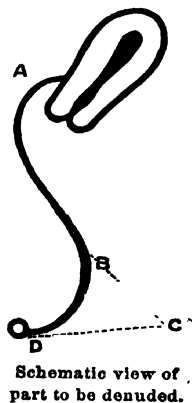
influence of ether. Four assistants will be serviceable, although three would answer the purpose. One of these should administer the anæsthetic, one should hold each knee, and a fourth should attend to the duty of handing the required instruments to the operator, and washing the sponges as they become bloody. The assistants, lifting the feet from the table and flexing the thighs so that the edges of the tibiæ will be horizontal, should hold the knees clasped under the arms and steady the feet with the hands of the same side, while the unoccupied hands of the other side retract the labia and expose the ruptured part. These directions should be observed by the assistant holding the right knee; he who holds the left should do so with the right arm, clasping it with this and retracting the labium with the right hand, while with the left he sponges the wound with sponges held in long handles, which do not cause his hand to obstruct the operator's view. It will at first appear that it would be difficult for one assistant to do all this. Let him who thinks so try it, and he will find that it is not so, and that such arrangement of his aids will be greatly to his advantage. This operation, like so many others in surgery, often fails, or at least drags heavily in its progress, from the want of a sufficient number of assistants, to each of whom is allotted an especial duty.

All being now ready, the index and middle fingers of the two assistants who hold the knees are fixed upon the labia by the operator, and, the degree of traction which they are to practise being regulated, the operation is begun.

Seizing the tissue just above the anus with tooth forceps or a tenaculum, a strip of mucous membrane is removed from the posterior vaginal wall and from the original site of the perineal body upwards as far as it is proposed to extend to the rectal side of the triangular denudation to be created on each side. Fig. 63 will show this very well. The furrow just alluded to will extend from D to B. It should always be carried to the point where the normal curve of the posterior vaginal wall is altered in its course, by loss of perineal power, and begins to take an excessive and abnormal curve, the whole wall being now shaped like S. One great object of the operation is to change the shape of this wall of the vagina from A B D to A B C. Before this is done, pressure upon it will cause the lower portion of the S to sag forwards. After it is done the whole wall under pressure from above downwards will be supported by the sacrum and the tissues which lie upon it for its upper curve, and by the perineal body for its lower.

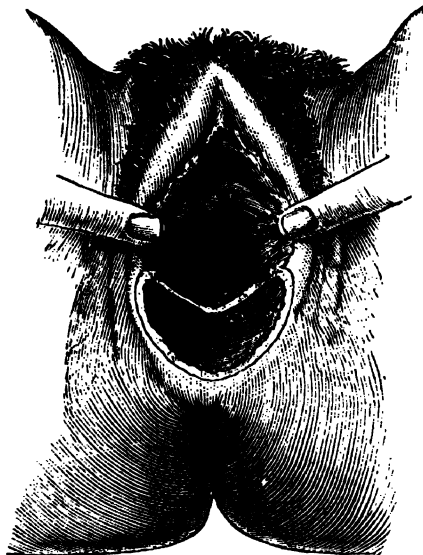
The rectal side of the new perineal triangle then is created by denudation of the posterior vaginal wall. If the base or rectal side of this trian-

Fig. 63.



gle does not involve the posterior vaginal wall, what does it involve? This was the original site of the perineal body. Its anterior or vaginal side was originally vagina, and the posterior vaginal wall now prolapses

FIG. 64.



Denudation for repair of perineum. (Savage.)

and usurps the place of this body. Baker Brown's operation for rectocele¹ consisted of a colpo-perineorrhaphy based upon this fact, and every one who has closed a perineum since his time, and not limited himself to a mere episiorrhaphy, has performed the same. Mr. Brown was very soon followed by Savage, who gives the accompanying diagram.

Savage says that his plan "includes in the resection all the redundant vagina at its ano-vulvar margin, in the first place; and in the second, the removal of a triangular portion of vaginal mucous membrane, the middle angle extending to some distance upwards along the posterior wall of the vagina," etc. He then declares

that it "causes the posterior segment of vagina to approach the pubis so as to offer an effectual obstacle to the prolapse." This method of operating was the natural and inevitable outcome of an effort to replace the perineal body, and every operator making this attempt performed more or less perfectly colpo-perineorrhaphy.

In reference to the origination of the present operation of perineorrhaphy, or at least as regards all its essential features, it may be stated that the credit of making it a colpo-perineorrhaphy and rendering it a remedy for rectocele belongs to Baker Brown. A reference to his work will put this beyond question, as he represents the operation in a diagram with this descriptive statement, "Operation for rectocele." His operation combined all that is essential in that which is now, with little modification, generally accepted. Since his publication of it, no one has materially altered it, except Marion Sims, who performed the important function of stripping the procedure of certain superfluities, like section of the sphincter and the use of quills, which were not merely useless, but absolutely hurtful.

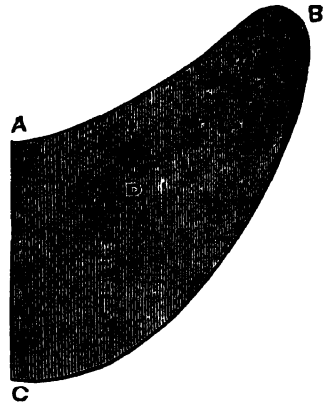
We have now formed what is to be the base and line of union of two triangles, which meet upon the furrow just created. Now catching up the

¹ Surg. Dis. of Women, 3d Eng. ed., p. 94.

tissue on the inner side of one labium majus, about midway between meatus and anus, another furrow is cut extending down to the anal origin of the first furrow, and another is then carried from the point selected on the labium backwards to the upper or vaginal extremity of the basic furrow. A triangular space, covered by mucous membrane, mapped out by three bleeding furrows, will be left, as shown in Fig. 65.

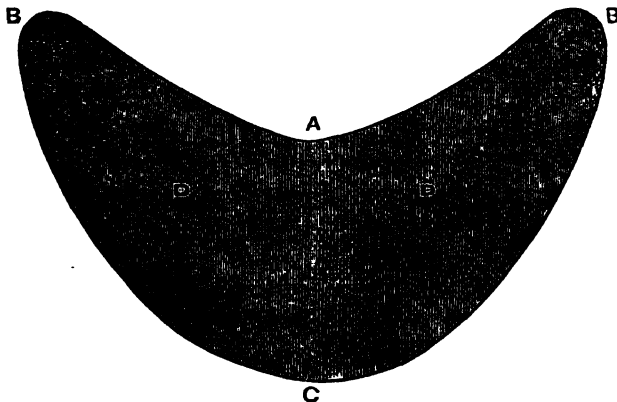
FIG. 65.

C A, furrow extending from anus up the vagina (the rectal side); C B, furrow extending from anus to point midway up labium majus (cutaneous side); B A, furrow extending from point on labium to vaginal extremity of rectal furrow (vaginal side). Now the tissue in the unabraded triangle D is removed by tenaculum and scissors, as little tissue as possible being cut away, and a bleeding triangle is left. The opposite side is similarly treated, and the result is two such triangles placed base to base upon the line C A. The doubling over of these upon each other, and the securing them in contact by suture, constitute the second part of the operation, as shown in Fig. 66.



One of the bleeding triangles which are to be created.

FIG. 66.



The two bleeding triangles about to be united.

If the student will cut two triangles shaped like Fig. 65 out of thin board and unite them by linen pasted upon both sides, so that it will act as a hinge, he will be able immediately and perfectly to comprehend both the first and second steps of the operation. It is in that way that I have best succeeded in explaining them in didactic lectures.

In performing the first part of the operation, I very commonly begin on one side and cut successive strips across until the whole surface is pared; but the method which I have mentioned simplifies the procedure, and after adopting it once for the complete understanding of the operation the operator may afterwards do otherwise.

This part of the operation may be performed by the knife, but it is done more expeditiously and with less hemorrhage by the scissors, as Emmet has so justly pointed out. Prof. E. W. Jenks, of Chicago, has proposed another method of denudation which will be found described in an interesting article by him in the *American Journal of Obstetrics and Diseases of Women and Children*.¹ This consists in the introduction beneath the mucous membrane of a pair of sharp-pointed scissors by which, without for a moment removing them, he by rapid snips separates the membrane from its attachment and removes it with great rapidity and little loss of blood. All the denudation done is effected in this manner.

Dr. Albert Smith, of Philadelphia, has employed in these cases and recommends the use of a large dentist's burr² with cutting flanges, which is made to revolve rapidly by a treadle which dentists now so commonly employ. By this the surface is rapidly, thoroughly, and bloodlessly denuded of its mucous covering.

The whole surface having been pared, the operator stops and carefully examines to see if any arteries are spouting, and if any undenuded surfaces still remain. If he find the former he twists them, and, if necessary, ties them with very delicate silk ligatures, which he cuts short; if the latter he catches them with the tenaculum, and with the bistoury cuts them away.

The first step of the operation is now finished. The operator should not hasten to the second, for the tissues should be exposed for a while that he may be assured against hemorrhage. Sutures should never be applied until all hemorrhage has been checked.

2d part of the Operation.—Now taking in the needle-holder a round, curved or straight needle, about two and five-eighths inches long, which will cause less hemorrhage than the needle with cutting edges, armed with a doubled silk thread; giving a loop about eight or ten inches long; he inserts it opposite the lowest external angle of the vivified triangle, which would be a little above the level of the anus, and makes it pass across the middle of the united bases of the triangles, over the rectum, and emerge at a corresponding point on the opposite side. This suture is nowhere visible within the vagina, for it lies embedded in the tissues lying over

¹ *Am. Journ. Obstet.*, vol. xii. No. 11, Ap. 1879.

² This instrument was first used by myself in the operation for vesico-vaginal fistula, but shortly afterwards Dr. Smith, without a knowledge of the fact, employed it in this procedure.

the rectum. It may be passed by one sweep, or, if this prove difficult, may be drawn out at the middle of its course, and reinserted. This suture is twisted at its extremities and left in position, and, another being taken, it is inserted above the first, and made to pass through the tissues at a higher point of the vivified surface. Guided by the finger in the rectum, it is kept embedded in the recto-vaginal septum, and emerges at a point on the other side corresponding to that of entrance.

This, like its predecessor, I am in the habit of concealing in the tissues, so that after its passage it is nowhere visible within the vagina. I believe that an embedded suture excites much less irritation on the denuded surface, and acts less like a seton upon it than an exposed one. In this way sutures of silk are passed, and by them those of silver are immediately drawn into place, about one-third of an inch apart, and inserted at a quarter or half an inch from the edges of the wound. All these are concealed from view except the last one or two, which should pass under the upper angles of the triangles, and catching up the vaginal tissue at the highest point of the denudation should bring them all together.

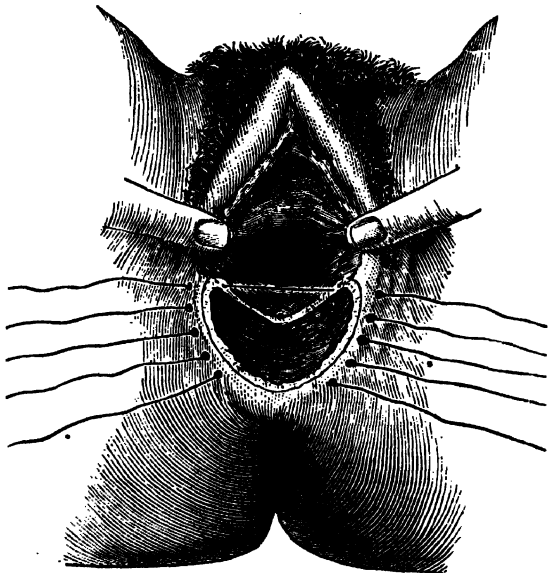
At each side of the perineal triangle thus formed, two pockets may be created in which putrid materials may collect. To avoid this great care should be taken to conceal the sutures especially at these points. Denudation should likewise be most carefully practised there.

For the details, as to the method of drawing the wires into place and twisting them, the reader is referred to the article on Vesico-vaginal Fistula. After the plan there described, he

twists them one after the other from below upwards. If it appear necessary, superficial sutures are then passed between the deep ones to approximate the cutaneous surface more completely.

At the risk of being considered prolix, I offer still another diagram giving a profile view of the sutures in position, and pressing one triangle against its opposite. The sutures will be seen to run back and pass through

FIG. 67.

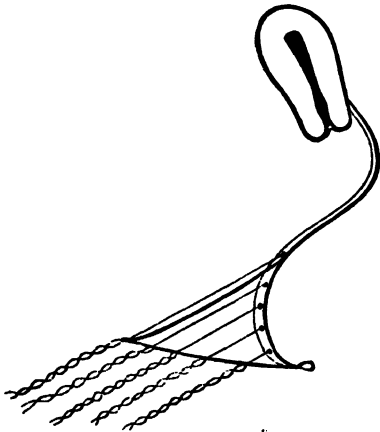


Shows surface denuded and sutures in position.

the posterior vaginal wall, dragging this forward as a background or base to the two opposed triangles now to become an artificial perineal body.

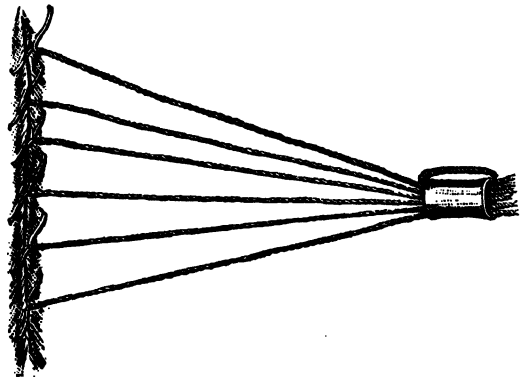
The sutures should not be cut short but left about two inches long, then twisted together and secured by a small piece of India-rubber tubing, after a plan suggested by Emmet and shown in Fig. 69. The patient is then put to bed; the knees are bound together; the dorsal or lateral decubitus preserved; the urine drawn by catheter every six hours; the vagina kept clean by syringing with tepid water; and the diet made nutritious, though mild and unstimulating. On the eighth or ninth day, the sutures should all be removed, and on the next, the bowels should be acted on by a saline cathartic, great care being observed to prevent tenesmus.

FIG. 68.



Profile view of recently closed perineum, sutures in place.

FIG. 69.



Method of securing the ends of the sutures. (Emmet.)

Operation for Complete Rupture.—Complete perineal laceration always involves rupture to a greater or less extent of the anterior wall of the rectum. If rupture of the bowel extend for more than from one inch to an inch and a half above the upper edge of the sphincter ani, it is better to close it by a primary operation consisting of vivifying its edges and uniting them down to the anus. After union of these parts, closure of the perineum may be practised. If the bowel be not injured above an inch and a half from the sphincter, one operation will suffice to close the whole. I would not be understood as making this a dogmatic rule, but merely one which approximates the line of conduct which I deem best.

The sole object of the operation for partial rupture is restoration of the perineal body. The objects of the operation for complete rupture are; first, restoration of the sphincter ani muscle to all its power and functions; second, closure of the rectal opening; and third, restoration of the perineal body. What constitutes the main object in the first operation, is the

least important of those striven after in the second. The operator must then appreciate that mere closure of the rent in the genital fissure is not what is desired. He may gain this, and not benefit his patient in the least, for incontinence of feces and gases may continue. Success involves always complete union of the ends of the severed muscle and complete closure of the rent in the bowel. To secure these the ends of the muscle, spread out and expanded, must be curled up and approximated, and the recto-vaginal septum must be drawn up and united to them. With these facts in view, clearly defined and appreciated, the difficulties of the operation greatly diminish. To no one are we so much indebted for their demonstration and illustration by practical results, as to Dr. Emmet, of this city, who, in 1873, wrote a valuable paper upon the subject, giving a clear exposition of the peculiar action of this accident upon the sphincter ani and of the best method of restoring it to its normal shape and functions.

Let Fig. 70 represent the perfect sphincter, Fig. 71 will show it ruptured and spread out, with the point of insertion and exit of the needles.

FIG. 70.

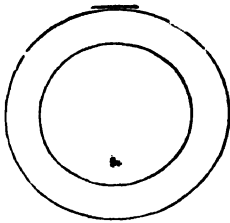


FIG. 71.

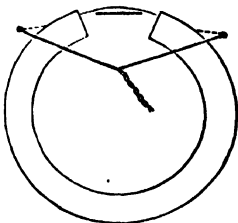
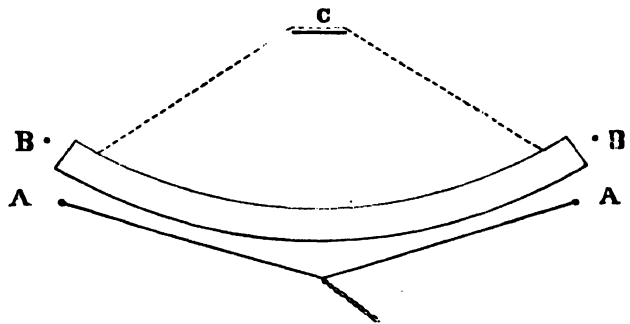


FIG. 72.

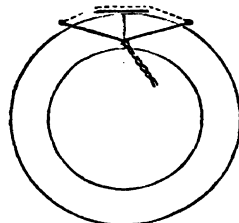


FIG. 73.

The dotted line shows the course of the metallic sutures embedded in the tissue. It will be seen that the remaining recto-vaginal wall is a fixed point, and that as the wire is twisted, the ends of the muscle are elevated, and the three points approach each other as shown at c. As the twisting goes on, these points come nearer and nearer together as seen in Fig. 72, until at last they unite as shown in Fig. 73.

Should the first needle be inserted and drawn out above the end of the broken muscle, as shown in B B, Fig. 71, the tissue at this point will be approximated, and the ends of the muscle brought close together, but absolute and complete union will not have been attained, and loss of function will still exist. The first suture is the important one, and must catch

the ends of the broken and expanded muscle so as to lift them upwards into contact with each other and with the recto-vaginal septum.

In vivifying the parts before insertion of the needles the two lateral triangles representing the perineal body split in two are denuded, and the line of denudation is prolonged backwards along the edge of the recto-vaginal septum. The border of the rectal mucous membrane at the extremities of the broken muscle as far as the upper end of the rent in the bowel is the guide for doing this.

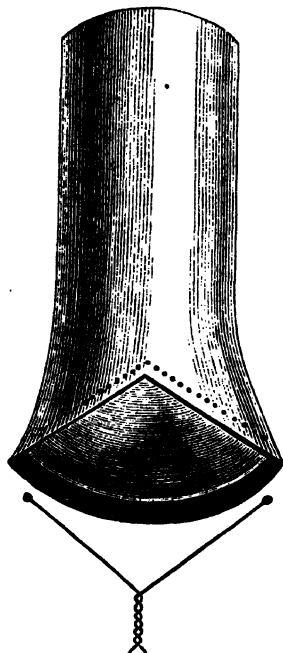
Fig. 74 is a schematic diagram showing the ruptured bowel, the expanded muscle at its anal extremity, the insertion and exit of the needles, and the course (dotted lines) of the embedded sutures. The line of denudation is marked out by the course of these sutures.

The rectal rent presents itself to the operator as an imperfect, isosceles triangle, apex above and base below. The two lateral borders of this are the parts to be vivified. The two basic angles are on a lower plane than that of the apex, and are less fixed in their position. As the three angles are acted upon by the constricting influence of the encircling suture, as this is gradually twisted, the two movable basic angles are elevated to the plane of that of the apex while the latter is by traction drawn down to meet them. Coincidentally the denuded sides of the triangle are, of course, approximated, and thus the rectal opening is completely closed.

To sum up this part of the subject, the rule for passing the first suture consists in the introduction of the needle as low down as the lower edge of the anus. From this point it passes upwards through the recto-vaginal septum, completely encircles the rectal rent, and comes out alongside of the lower edge of the anus on the opposite side.

Let the reader refer to Fig. 75 and he will appreciate that a suture which takes this course, like the string at the mouth of a bag, puckers the open parts, draws them into apposition, and controls the action of the sphincter. The two conditions which we have to fear as sources of failure after this

FIG. 74.



operation are, first, recto-vaginal fistula, and second non-union of the sphincter. This method, to a great extent, secures us against both. The subsequent steps of this operation are the same as those of that for partial rupture.

I have in a large experience with this operation failed four times. As it is from our past failures that we must learn to avoid failure in the future, I shall strive to give the reader the benefit of my experience. In two of my four cases perfect union was obtained, but the rectum was found, in spite of the fact that in both patients catharsis had been kept up for a week, filled with large, hard, scybalous masses. This created violent tenesmus, and destroyed the newly formed perineum.

In the third case a large, bulbous, rectal plug had been left in place, and its removal ruptured the united extremities of the muscles, leaving the perineum whole.

In the fourth case the nurse in using the syringe for a rectal injection unquestionably passed its nozzle repeatedly between the lowest suture and that just above it, leaving a central opening in the perineum, which constituted a recto-perineal fistula, the sphincteric union remaining perfect.

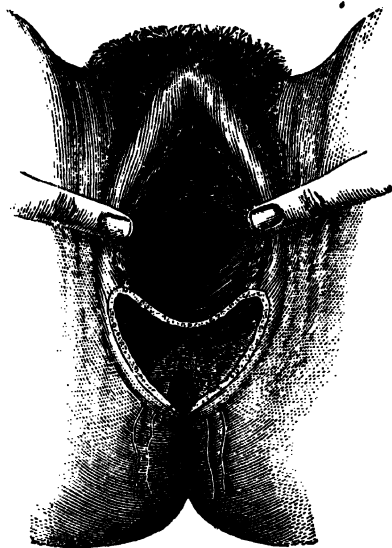
Upon the experience thus obtained, I have predicated the following rules of practice, which I invariably observe and strongly recommend:—

1st. When about to operate for complete perineal laceration, give *two entire weeks* to complete evacuation of all scybalous masses from the intestinal canal. This tract, it must be remembered, is twenty-five feet long, and keeps fecal masses stored up in it for months. Do not practise hypercatharsis, but let the patient have two medicinal evacuations in every twenty-four hours. This may be done by giving one compound rhubarb or compound cathartic pill every eight, twelve, or twenty-four hours, according to the patient's susceptibility to catharsis.

2d. During this time feed the patient freely upon animal food and animal broths, wheat, potatoes; and other nutritious articles of diet.

3d. During the first four days after operation sustain her entirely, though thoroughly, upon strong animal broths alone, avoiding milk especially, which creates scybalæ of hardened casein. The reliance upon milk for avoidance of scybalæ is a mistake.

FIG. 75.



Surface denuded in complete perineal rupture, and first two sutures in position.

4th. Keep the bowels constipated for four days after operation—till primary union takes place. At the end of that time they should be acted upon by a gentle laxative or enema.

5th. If a rectal tube be employed, let it be one of small size.

6th. Should an enema be used, let the physician himself administer it, unless the capacity of the nurse be above suspicion.

Every surgeon must admit that no detail is too insignificant for his personal attention, which is capable of turning the balance in favor of or against the success of an operation which he has performed.

I have already stated that sometimes the rectal rent is so extensive that it cannot be closed by the same operation as that by which the perineum is closed. Under these circumstances, which I have encountered several times, colporrhaphy should be first performed, and immediately or at a later period perineorrhaphy. The sutures may be passed by a suture with a needle at each extremity from the vagina into the rectum, and be left hanging from the anus, or they may be left in the vagina.

It is often necessary to perform two operations, one posterior colporrhaphy and the other perineorrhaphy, at the same time, for fear of discouraging the patient by too frequent resort to operation. Under these circumstances a long ovoid denudation should be extended up the vagina towards the cervix, and the edges brought together by catgut or silk-worm gut suture, and then perineorrhaphy should be performed. The perineal sutures being removed on the eighth or ninth day, the animal sutures may be left in the vagina to undergo absorption. This prevents the draining of the new perineum necessary for removal of silk or silver sutures.

For this purpose, Jenks,¹ after denuding a tongue-shaped extension up the posterior vaginal wall, approximates the raw surface by catgut sutures, runs down upon each of these a perforated shot, passes down upon this a piece of hard rubber tubing two and a half inches long, and puts at the end of this another shot which he compresses firmly. Upon removal of the compressed shot, the tube, uncompressed shot, and suture can all be readily withdrawn. Fig. 76 shows this part of Jenks's ingenious operation.

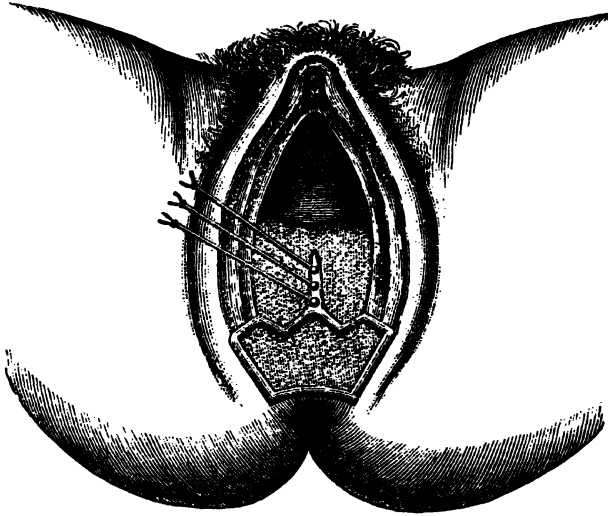
After closure of the perineum, should the patient tolerate it, a rectal tube may be introduced occasionally for the escape of air from the bowel, or in place of this a large catheter may be kept in recto, though this is not necessary.

Great danger of separation of the lips of the wound, even when perfectly united, occurs on the occasion of the first alvine evacuation, when scybalous masses are apt to pass and to tear the newly united parts asunder. As I have stated, I have twice had this happen in my experience in operations performed in private practice. To prevent this unfortunate occurrence, some keep the bowels acting daily from the time of operation. Formerly I kept them constipated until removal of the sutures; now, in consequence

¹ Loc. cit.

of the accidents to which I have alluded, I adopt the plan which Granville Bantock endorses in an excellent¹ monograph upon this operation, that of keeping the bowels quiet for three or four days, and then acting upon them by laxative enemata.

FIG. 76.



Jenks's operation of colpo-perineorrhaphy.

A variety of substances are now used as sutures in this operation. The Germans, following the lead of Simon, still cling to silk; in England and America, Sims's silver wire is very generally used; but some follow the advice of Lister in employing catgut, while Bantock has a strong bias in favor of the gut of the silk-worm.

CHAPTER XII.

VAGINISMUS.

Definition.—This affection consists in a peculiar sensibility or hyperæsthesia in the nerves of the vaginal mucous membrane at the site of the hymen, which upon irritation are supposed to produce spasmodic contraction in the sphincter vaginæ muscle.

Frequency.—Vaginismus is of frequent occurrence, and will often be met with in practice. It has received little notice heretofore, not because

¹ On Rupture of the Female Perineum. London, 1878.

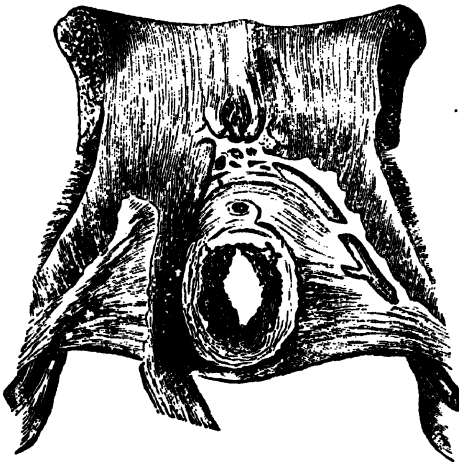
of its rarity, but because the attention of practitioners has not been specially directed to it. Dr. Sims declares that during twenty-four months he met with it seventeen times, and during four years I saw thirteen well-marked cases.

History.—The fact that such a condition occurs and becomes a morbid state of considerable importance was known to Dupuytren, Roux, and Burns,¹ of Glasgow. They not only described it, but adopted an operative procedure which has since been revived, and is even now by many regarded as the most reliable method of cure. Their views did not apparently attract much attention, nor was their import really appreciated until, at a later period, they were insisted upon by Professors Simpson and Scanzoni. Between August, 1861, and October of the same year, it was described by Debout,² Michon, and Hugnier, and just afterwards by Marion Sims, who applied to it the appellation which I have adopted. By these authors, incision, subcutaneous or through the mucous membrane, was recommended, in imitation of earlier investigators, after less severe measures have failed of effecting a cure. Since the time last referred to, the affection has been allotted a space in the various systematic text-books which have appeared upon gynecology.

Anatomy and Pathology.—It is, I think, very generally accepted as a fact that the bulbo-cavernosus muscle which passes over the clitoris and forms a figure-of-8 with the sphincter ani is the constrictor vaginae. Dr. Savage denies this positively, declaring that “the constriction of the vaginal ring is produced by the pubo-coccygeus muscle.” This is a broad and powerful muscle situated within the pelvis just above the point at which

the vaginal walls branch off to seek their osseous attachment. Arising from the inner surface of the pubic bones its fibres take various courses; its median fibres descend by the side of the urethra and vagina, some of them turning in between the vagina and rectum to meet similar fibres from the opposite side in the perineal body; another more outward series, turning in beneath the rectum, intermix with fibres of the other side; while the remaining fibres still more outward are inserted into the sides of the coccyx. Fig. 77 shows a portion of this muscle.

FIG. 77.



Pubo-coccygeus muscle. (Savage.)

¹ Simpson, Clin. Lec. Dis. of Women.

² Bul. Gén. de Thérap. Méd. et Chir., 1861.

Certain morbid states produce so great a degree of irritability in the nerves supplying the vulva and lower part of the vagina, that upon contact with foreign bodies a spasm occurs in this and in neighboring muscles, which constitutes the disease that now engages us. The attention of some has been chiefly fixed upon the nervous condition, the pubic nerve being, according to them, the seat of the difficulty, while others have especially regarded the resulting muscular spasm. It is curious to perceive how, from different standpoints, both parties were led to the same surgical resource.

Causes.—This affection bears to the vagina the same relation which blepharospasm does to the eyelids, or laryngismus to the larynx; and, like those affections, is not ordinarily a primary disorder, but one which results from some special local cause. It may arise from excessive nervous irritability affecting the whole system, as is often seen in hysterical women, or be produced by some local disorder of apparently insignificant character. Prof. Willard Parker¹ reports a case which was due to an irritable caruncle of the meatus not larger than a flaxseed, removal of which resulted in cure. In other words, it may be an idiopathic affection, or symptomatic only of some other disorder.

The recognized causes of the disease are—

- The hysterical diathesis;
- Excoriations or fissures at the vulva;
- Irritable caruncle of the meatus;
- Chronic endometritis or vaginitis;
- Pustular or vesicular eruptions on the vulva;
- Neuromata;²
- Fissure of the anus;³
- Hyperæsthesia of the remains of the hymen;
- An abnormally rigid perineum;
- Disproportionately large size of male organ.

Professor Scanzoni in August, 1868, published his views upon this subject. During the preceding three years he had seen thirty-four marked cases, due chiefly, he thought, to violent efforts at sexual intercourse, practised upon women having small vaginas and well-developed hymens. Scanzoni found that twenty-five of his thirty-four patients had various functional and organic difficulties, which in twenty cases had come on after marriage; in eleven, there was congestive dysmenorrhœa; in one, amenorrhœa had existed for three years; in thirteen, there was chronic metritis; four had either ante- or retroversion; in one, there was perimetritis; in seventeen, chronic uterine catarrh; in fourteen, vaginal catarrh;

¹ Bul. N. Y. Acad. Med., vol. i. p. 439.

² Simpson, Med. Times and Gaz., 1857, vol. i. p. 336.

³ H. Dewees. Baker Brown.

in one, anteflexion; in two, retroflexion; nine had urinal difficulties; one had inflammation of the right Bartholin's gland; in fourteen, there were symptoms of anemia; and in seventeen, of hysteria. Although the sexual act could not be fully completed, conception was not entirely impossible, as out of the thirty-four cases two had conceived; in the other thirty-two, sterile marriages had existed from one to eleven years. This sterility was not due to want of sexual desire, but arose entirely from spasm involving all the muscles of the pelvis, which also rendered examination, either by the touch or speculum, impossible without the use of an anæsthetic.¹

Some of the causes which I have enumerated produce vaginismus by direct irritation of the nerves of the vaginal mucous membrane; others, by creating a discharge which indirectly establishes the same condition.

Dr. William Neftel, of this city, has recently published some very interesting observations upon the influence of lead poisoning in creating this neurosis. He records four very striking cases, having this as a cause, and in one, the vaginismus was the symptom which incited an examination for poisoning by lead. These cases were successfully treated by electricity.

Symptoms and Physical Signs.—The patient will generally complain of excessive pain upon sexual intercourse, the mere attempt at which will throw her into a state of nervous trepidation and apprehension. This and sterility will probably be all that will have attracted her attention, though in some cases a marked tendency to spasm will have been noticed upon sudden changes of position, or washing the genital fissure. One or more of these symptoms call for a physical exploration, when the following facts will be recognized. As soon as the finger is brought into contact with the site of the hymen, the patient will probably spring from her place, complain of agonizing pain, and evince great nervous disturbance. Should the examination be persisted in, introduction of the finger will be found to be almost impossible, and if it be forced into the canal, a violent muscular contraction will be perceived. If, instead of the finger, a camel's hair brush or a feather be employed, severe pain and contraction will follow even this application to the surface.

Differentiation.—There is no other affection with which this can be confounded. All that it will be necessary to decide concerning it will be, whether it is an idiopathic or a symptomatic disorder.

Course and Duration.—In its duration it is unlimited. Cases are recorded in which it lasted for twenty-five and thirty years, and unless relieved by art, it will probably, in its worst forms, become a permanent condition. In its less severe type, and more particularly when dependent upon some other diseased state, it may often be relieved by mild means, or pass away without treatment.

Prognosis.—"From personal experience," remarks Dr. Sims, "I can

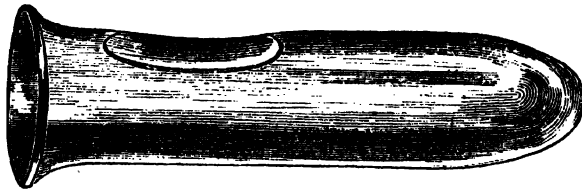
¹ New York Med. Journal, vol. ix. p. 181.

confidently assert that I know of no disease capable of producing so much unhappiness to both parties to the marriage contract, and I am happy to state that I know of no serious trouble that can be so easily, so safely, and so certainly cured."

The experience of Scanzoni, Tilt, and others, who have adopted an entirely different treatment from that pursued by the last-mentioned author, and who deprecate the use of the knife, leads them to the same favorable conclusion. In my own experience I have met with no case in which I have not been able to give relief, either by operative interference, or by the complete removal of the disease of which this condition was a symptom.

Treatment.—Careful search should be made, before the adoption of treatment, for the cause of the affection. Should this be discovered, hope may be entertained that its removal will effect a cure. Should no cause be discovered, or its treatment not be followed by recovery, the general state of the patient should be altered and improved by exercise, change of air and scene, vegetable and mineral tonics, sea bathing, and cheerful society. Riding on horseback has been especially advised, but rowing, bowling, walking, or any other exercise which develops the system and improves the tone of the nervous organism, will probably answer as well. Local treatment calculated to soothe the excited vaginal nerves should then be resorted to. The free use of vaginal injections containing laudanum, creasote, or acetate of lead is sometimes productive of good. Dr. Peaslee thought highly of an ointment composed of two grains of atropine to an ounce of lard. This alkaloid, or the extracts of opium, belladonna, hyoseyamus, or stramonium, may be incorporated in an ointment or in

FIG. 78.



Sims's vaginal dilator.

suppositories, and applied freely to the sensitive part. In some cases suppositories containing from five to ten grains of iodoform prove very beneficial. At the same time the glass tube represented in Fig. 78 should be gently inserted into the vagina, and kept there for as many hours a day as practicable. Its presence will tend to benumb the nervous sensibility, distend the vagina, and produce a tolerance of foreign bodies. During this treatment the patient should live apart from her husband. This plan of treatment, simple as it is, combined with copious vaginal injections

used night and morning for the complete removal of irritating discharges, as well as for their own direct sedative effects, will often prove effectual and avoid the necessity for a surgical procedure of some gravity.

That the operation proposed by Dr. Sims for the cure of this condition is effectual, there can be no doubt. I have myself resorted to it in a large number of very aggravated cases, and in all with perfect success. But there has been for some time in the minds of many gynecologists a growing distrust of the necessity of a resort to a procedure, which is reported in one case to have resulted in fatal hemorrhage. In many cases, even of grave character, it has been proved that by distention of the vagina, either with the fingers or by expanding instruments, and subsequent maintenance in the canal of a vaginal plug, cure can be accomplished as perfectly and even as rapidly as by the cutting method. Two eminent authorities, Scanzoni and Tilt, have especially advocated this plan and opposed the operation of Sims. Their views, as reported in medical journals, I here place before the reader.

“Of more than 100 cases that have fallen under Scanzoni’s observation, in times past, he has been completely successful in the treatment of all to which he was able to give his personal attention, without in a single case having recourse to the knife. The first condition of success is complete sexual abstinence; for the first three or four days, a tepid sitz-bath should be used night and morning; warm local bathing, with aq. Goulardi, or the same applied with lint, several times a day. Defecation must be regulated, and friction from motion carefully avoided. After a few days, the sensibility of the parts will be so much allayed that a solution of arg. nit. x-xx grs. to ℥j of water, may be applied with a brush. After about eight days’ continuance of this treatment, vaginal suppositories of ext. belladonna and cacao-butter may be placed behind the hymen, and in contact with it, daily. These remedies, either alternately or simultaneously, must be continued until every trace of inflammation has disappeared, and the normal sensibility is restored. Generally two or three weeks will be required to attain these objects. Then dilatation must be commenced; but for this purpose sponge-tents are useless. A graduated series of glass conical specula are best adapted to this object. After the first slightly painful attempt, the patient generally will be able to introduce it with facility, and it may be allowed to remain from one-half to one hour. Even when the hymen remains, it will not be necessary to incise it, as dilatation can be effected without recourse to that measure. At first, the dilator may be used every two or three days, then every day or twice a day for two or three hours, gradually increasing the size of the dilator until the object shall have been attained, which in some instances may require an instrument admitting dilatation, as that of Segalas. Sitz-baths, belladonna, and pencilling with nitrate of silver may be required from time to time, and the cure will usually be completed in from six to eight weeks. It will be seen that, although the treatment of Sims is attended with an equally satisfactory result, it is of a much more serious character than the treatment adopted by Scan-

zoni ; and, after the operation, the success of the treatment depends generally upon the subsequent dilatation. The time required, moreover, is nearly the same by either process."¹

Dr. Tilt takes the same position in deprecating resort to the knife and giving preference to forcible distention. He anæsthetizes his patient, and introducing both thumbs, back to back, forcibly distends the ostium vaginæ for five or six minutes. He then keeps a large vaginal plug *in situ* by a T bandage for a number of days. This author lays especial stress upon the necessity, already alluded to, of first removing any existing uterine or vaginal disease, in the hope of simultaneously curing the secondary trouble, before having recourse even to the process of distention.

Should these means fail, the operation of removal of the hymen and section of the perineal body may be practised. It will be observed that I do not say of the sphincter vaginæ muscle. This is certainly not severed to any extent ; and it is highly probable, if we accept Dr. Savage's anatomy of it, that its fibres are nowhere involved in the section. My impression is, that Sims's operation accomplishes two things : first, ablation of the hymen often removes nerves which are in a condition of hyperæsthesia ; second, section through the perineum enlarges the ostium vaginæ, and thus removes an obstacle to intercourse.

❶ I be correct in this, we have here an instance of the injury done by theorizing with reference to a subject which should be put beyond doubt by anatomical demonstration on the cadaver. No one would have done mischief, if told to enlarge the ostium vaginæ by section ; many have caused serious hemorrhage by endeavoring to sever the bulbo-cavernosus muscle, which good authorities declare to be no sphincter at all.

Sims's Operation.—The patient having been anæsthetized, and placed on the back, upon a table, the remains of the hymen are entirely excised by a pair of curved scissors. The slight hemorrhage resulting from this will soon cease under the application of a compress wet with ice-water, or of a solution of the persulphate of iron.

The index and middle fingers of the left hand are then passed into the vagina, so as to put the fourchette on the stretch. By means of a scalpel a deep incision is then made on the right of the mesial line, terminating at the raphé of the perineum. A similar incision is then made on the other side, the two being united at the raphé, and extended to the perineal integument and through its upper border. Each of these incisions will extend from about half an inch above the upper border of the sphincter (meaning evidently the bulbo-cavernosus), to the perineal raphé, thus passing across the muscle, and measuring nearly two inches.

After this, the vaginal dilator is placed in the canal, and worn for two hours in the morning, and three or four in the evening, according to the

¹ N. Y. Med. Journal, loc. cit.

tolerance for it which is manifested. Fig. 78 represents the glass vaginal dilator, which is three inches long, slightly conical, open at one end and closed at the other, and varying in size from an inch to an inch and a half in diameter. This instrument is kept in place by a T bandage, and should be worn for two or three weeks.

Burns's operation, more recently endorsed and practised by Sir James Simpson, rests, it appears to me, upon too weak a basis to warrant its use. It consists in section of the pudic nerve, which Sir James says "may be exposed by cutting through the skin and fascia, at the side of the labium and perineum; beginning on a line with the front of the vaginal orifice, and carrying the incision back for two inches. The nerve, being blended with cellular substance, is not easily seen in such an operation; but it may be divided by turning the blade of the knife and cutting through the vagina to its inner coat, but not injuring that. It may be more easily divided by cutting from the vagina. Slitting merely the orifice of the vagina will not do; we must carry the incision fully half an inch up from the orifice, and also divide the mucous membrane freely in a lateral direction." Now let the reader examine Savage's plate, showing the pudic nerve, and he will see, that to sever it "by cutting from the vagina," the incision would have to be carried as far as the ramus of the ischium on each side, where it lies in direct contact with the pudic artery.

No one can examine a diagram showing the course of this nerve without strongly suspecting, that its section is an operation which has existed in the mind of the operator, and never really been performed upon the living being.

Upon what then did this procedure rest for its good effects? Upon the same basis as that for the supposed section of the sphincter; severance of the tissues at the ostium vaginæ and consequent enlargement of the entrance to the vagina.

The practice which I should recommend in vaginismus, with the light which we at present have for our guidance, is the following:—

1st. Remove existing uterine, ovarian, vaginal, urethral, or rectal disease, if any can be discovered; insist upon the patient's living *absque marito*; let her use copious vaginal injections of warm water twice daily; use the local anodynes mentioned by rectal or vaginal suppository, or throw into the vagina, every night, by means of a syringe, a pint of fluid, in which are dissolved twenty grains of chloral; have a plug inserted into the vagina by the patient and retained for several hours every day; give such tonics as quinine, strychnine, and iron freely; and, if it can be accomplished, let the patient have a change of air and scene, and indulge in sea bathing.

2d. Should this plan fail, anæsthetize the patient, and by means of the blades of a trivalve or quadrivalve speculum, distend the ostium vaginæ

thoroughly; follow this by the use of the vaginal plug, and resort to the means above given for locally soothing and generally sustaining.

3d. Should this method likewise fail, anæsthetize the patient; remove the hymen by scissors, a simple procedure; incise the perineal body exactly as it is torn in parturition, introduce the plug, and keep it *in situ* for a week, removing it and cleansing it daily. After this, let the patient use it herself, and follow out the directions given under my first caption.

The act of parturition would be very likely to remove this condition entirely, but unfortunately one of the most constant of the results of vaginismus is sterility. This arises from the fact that sexual intercourse is so painful that it is imperfectly performed, or, as is more commonly the case, all efforts at overcoming the obstacle to it cease, and the woman lives a single life. Should this state of things be found to exist, the patient may be thoroughly anæsthetized, in the hope that complete connection, accomplished under these circumstances, may result in pregnancy.

CHAPTER XIII.

VAGINITIS.

Definition and Synonyms.—The mucous membrane lining the vagina is subject to inflammatory action, which receives the name of vaginitis. It is the same disease which by certain authors has been described under the titles of blennorrhœa and blennorrhagia.

Anatomy of the Vagina.—The vagina is a canal formed of strong, muscular elements and lined by mucous membrane. At its upper extremity it is attached to the cervix uteri, with which it unites at a variable point, but usually midway between the os internum and os externum. This canal consists of three coats: 1st, an outer coat, formed of fibrous and elastic tissue; 2d, a middle coat, formed of unstriped muscular fibre and fibre-cell, which are subject like the same structures in the uterus to great hypertrophy during utero-gestation; and, 3d, an inner coat or lining mucous membrane, composed of connective tissue and elastic fibre, and covered over with squamous epithelium. The 3d extends to the fourchette; the 1st and 2d spread out at the upper portion of the perineum, making the perineal septum, and attach themselves to the ischio-pubic rami. Its general form has been aptly likened, by Dr. Savage,¹ to that which would be assumed by a flexible tube if shortened to nearly half its

¹ Op. cit.

FIG. 79.



Filiform papillæ of the vagina.
(Kilian.)

length by a cord passed from end to end through one of its sides. The ridge thus formed is called the anterior column of the vagina, and marks the vesico-vaginal septum. It is about two inches long, while the posterior wall, the posterior column, as it is called, is twice that length. The anterior column, or cord, which shortens the vagina, puckers its investing mucous membrane and throws it into folds or rugæ, which run transversely towards the posterior column. This mucous membrane is studded with papillæ, which are covered by pavement epithelium. The papillæ of the vagina, which were first fully described by Dr. Franz Kilian, were regarded by him as having for their function the transmission of sensation. He represents them as being thread-like and filiform, as shown in Fig. 79.

Much discussion has occurred among anatomists as to the presence of muciparous glands between the folds of the vaginal mucous membrane, some asserting and others as positively denying their existence. The researches of Huschke, Jarjavay, Jamain, Farre, and other eminent investigators, enable us to accept their existence as an undoubted fact, though it is curious that Charles Robin¹ and Sappey² have been unable to discover them. The vagina may then be said to be lined by a mucous membrane which is covered by epithelium, and thrown into folds which are studded by projecting, filiform papillæ, between which lie numerous muciparous follicles.

Varieties of Vaginitis.—Vaginitis assumes three forms, which differ from each other sufficiently to require separate investigation. They are denominated as follows :—

- Simple vaginitis ;
- Specific vaginitis ;
- Granular vaginitis.

Prof. Hildebrandt, of Germany, has recently described another variety which he styles “adhesive” for the reason that its chief characteristic is to produce adhesions between the vagina and uterus. It occupies the upper third of the vagina : the mucous membrane bleeds readily ; and the discharge is thick, creamy, and sanguinolent.

Simple Vaginitis.

Definition.—This variety of vaginitis consists in inflammation of the mucous membrane of the vaginal canal from some cause other than gonorrhœal contagion.

¹ Nysten's Dictionary.

² Descriptive Anatomy.

Varieties.—It may exist in acute or chronic form, either of which types may appear originally or be the result one of the other. The acute form may be excited by some special cause and rapidly pass into the chronic; or, originating as a low grade of inflammation, the disease may at any time take on the characters of virulence and acuity. Two subdivisions of simple vaginitis, the recognition of which at the bedside constitutes an important point, are, primary and secondary. Sometimes the disease exists as a primary lesion, but very commonly it depends upon the excoriating properties of a fluid discharged by the mucous membrane of the uterus. Under these circumstances no treatment addressed to the vaginal surface will effect a cure, for even if the disorder existing there be removed, it must inevitably return so long as the cause which originally produced it remains.

Causes.—In the great majority of instances this affection, more particularly in its chronic form, depends upon a discharge from the uterus, to which it is secondary. It may, however, arise from any of the following exciting influences:—

- Exposure to cold and moisture;
- Injury from pessaries or coition;
- Disordered blood states, as those of phthisis and the exanthemata;
- Retained and putrefying secretions;
- Chemical agents;
- Parturition.

After matrimony the acute form is not unfrequently excited, and in prostitutes, whose occupation involves an abuse of sexual intercourse, it is quite common.

A bit of sponge, or other substance which retains the natural secretions, left in the vagina until putrefaction occurs, will often induce the affection, and three of the most virulent cases that I have ever seen were caused by contact of a solution of chromic acid with the vaginal walls in making an application to the uterus.

Pathology.—At the commencement of the disease, the mucous membrane of the vagina becomes highly vascular and its arterioles are distended. There is a rapid moulting of epithelium, so that abrasions often exist, and at times follicular ulcerations and diphtheritic deposits make their appearance. Sometimes, though rarely, the epithelium lining of the vagina is thrown off entire, constituting a cast or mould of the canal very similar in character to the dysmenorrhœal membrane which is occasionally expelled from the uterus.

In very severe cases the inflammatory action passes down into the sub-mucous tissues, and a true phlegmonous process is established which may result in abscess. For a period varying from fifteen to thirty hours after the inception of the disease, the natural secretion of the part is checked;

then pus of acrid and offensive character pours forth freely, which, in a week or ten days, is replaced by muco-purulent material. This discharge is found to consist of serum, large numbers of epithelial cells, pus, blood-globules, and an infusorial animalcule called the *trichomonas vaginalis* by M. Donné, who first described it. By some the last has been regarded as ciliated epithelium separated from the uterus, but it is probably an animalcule which exists in vaginal mucus of unhealthy character. M. Donné at first regarded it as characteristic of specific vaginitis, but subsequently renounced the view.

Symptoms.—Acute vaginitis manifests itself by the following symptoms:—

- A sense of heat and burning in the vagina;
- Aching and weight at the perineum;
- Frequent desire for micturition;
- Profuse, purulent discharge of offensive character;
- Violent pelvic pain and throbbing;
- Excoriation of the parts around the vulva.

In the chronic form the disease shows the same symptoms, though with much less severity. In very mild cases, only a slight itching or burning sensation is experienced, with discharge of the leucorrhœal matter.

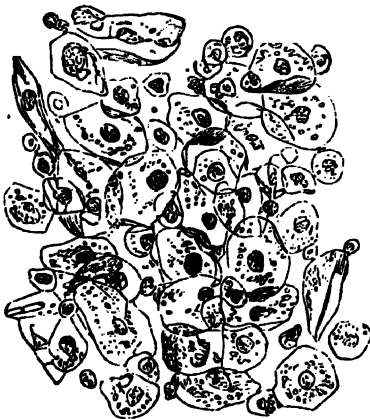
Physical Signs.—When the inflammation is acute the labia are found swollen and tense, the mucous membrane of the vaginal canal red and

covered with pus, and the animal heat very much increased. Introduction of the finger produces great pain, and often cannot be tolerated. As the labia are separated a flow of fetid muco-pus is discharged. If the canal be explored by means of the speculum, its surface will be found congested, while at numerous points abrasions, and perhaps follicular ulcerations, will be noticed. The inflammatory appearances of the vagina will be seen to have extended to the cervix uteri, and very generally from the os will be found to hang a plug of mucus secreted by the irritated, or even inflamed, Nabothian follicles.

Prognosis.—In its acute form it usually runs its course in about two

weeks. In the chronic form it lasts for an indefinite time, often subsiding into ordinary vaginal leucorrhœa, or rather into a state of which this is the only prominent symptom.

FIG. 80.



Epithelium in all stages of development, in simple vaginitis. 220 diameters. (T. Smith.)

Differentiation.—Simple vaginitis may be confounded with—
 Gonorrhœa;
 Endometritis;
 Pelvic abscess;
 Granular degeneration of cervix.

From the first the differentiation is always difficult and frequently impossible. The means by which it may sometimes be accomplished will be mentioned in the article relating to Specific Vaginitis. From the three remaining affections it is readily distinguishable by the speculum and vaginal touch. An error will be committed only when the practitioner is not mindful of the possibility of its occurrence, and draws his conclusions from insufficient data. I have seen two cases of profuse and obstinate vaginal discharge regarded as the result of vaginitis, which were in reality produced by pelvic abscesses that emptied their contents into the upper part of the canal. An element in such cases calculated to mislead a superficial examiner is the fact that vaginitis does really exist to a limited extent as a result of the purulent flow from the abscess. This remark likewise holds true in reference to endometritis and granular degeneration.

Complications.—Vaginitis sometimes produces violent urethritis, and less frequently results in endometritis, Fallopian salpingitis, and pelvic peritonitis.

Specific Vaginitis, or Gonorrhœa.

Definition.—This variety of the affection consists in inflammation of the vulva, vagina, and urethra, arising from a specific contagion which is transmitted by a yellow, purulent discharge.

Pathology.—The purulent material which is the contagious element, after remaining for some time in contact with the vaginal walls, excites in their investing mucous membrane an active hyperæmia which results in heat, swelling, pain, and an ichorous and abundant purulent secretion. This inflammation may be simulated by simple acute vaginitis, but its most characteristic features are usually excited by the contagious influence just alluded to. The disease may affect all the localities above mentioned at the same time, but very often it is limited to the upper part of the vagina, to the vulva, or to the urethra. In some cases it is for a length of time concealed in the vaginal cul-de-sac, no other part of the vagina being affected. This fact explains, says Alphonse Guérin,¹ how women apparently healthy transmit gonorrhœa.

Causes.—As there is but one cause for scarlet fever, for measles, and for variola, namely, absorption of a specific poison or contagious material, so is there, it appears to me, but one cause for gonorrhœa. It is true that simple acute vaginitis may simulate gonorrhœa so closely that the

¹ *Maladies des Organes Génitaux*, p. 285.

most experienced observer will be foiled in diagnosis, but this fact does not prove the diseases to be identical. The poison of gonorrhœa produces inflammatory results as a certain consequence of contact; the causes of acute vaginitis produce them as an accident which probably in a different state of the patient's system would not have occurred.¹

Symptoms.—The symptoms of this variety of vaginitis differ very little, indeed in many cases not at all, from those of the simple acute form. They may be thus enumerated:—

- Heat and burning in the vagina;
- Aching and sense of weight at the perineum;
- Frequent desire for micturition;
- Scalding in the passage of urine;
- Profuse purulent leucorrhœa of offensive character;
- Violent pelvic pain and throbbing;
- Excoriation of the parts around the vulva.

Physical Signs.—The vulva, vagina, and urethra will be found swollen, tense, red, and hot. In the beginning they are unnaturally dry, but very soon a profuse secretion bathes them with a creamy pus, sometimes streaked with blood. Should the affection have exerted its influence chiefly upon the vulva, pruritus, excoriation, and intense heat will be observed. Should the urethra be chiefly or solely diseased, instances of which are recorded by Ricord and Cullerier, the most violent scalding upon the passage of urine will especially annoy the patient.

Differentiation.—It will be seen, from what has been already stated, that the differentiation of this disease from simple acute vaginitis must be extremely difficult. In many cases it is impossible, for there are no signs which can be regarded as positively conclusive. The trichomonas vaginalis, once supposed, by Donné to be pathognomonic of specific vaginitis, is now known to exist in the pus of that which is simple; and urethritis, formerly viewed as diagnostic by many, is sometimes a complication of the simple form and is sometimes absent in the specific.

The following are the symptoms which should lead us strongly to suspect the specific nature of a case:—

- Great virulence and acuity in development;
- Development in a woman previously free from vaginal discharges;
- Marked urethral complication;
- Copious purulent discharge;
- Transmission to the male from coition.

Although it is true that in many cases these symptoms will render us

¹ This view is denied by many of the best authorities, who regard gonorrhœa as having nothing specific about its nature. At the same time that I have no wish to ignore the opinion with which mine conflicts, I have preferred to give my own impressions without discussing the matter.

certain in our conclusions, in many others they will exist in cases certainly of non-specific character. I have on two occasions seen them all attend cases of vaginitis, excited by accidental contact of chromic acid with the vaginal walls.

Course, Duration, and Termination.—The duration of the disease will depend in great degree upon the character of the treatment adopted. Under a proper management even a severe case may often be cured in from two to three weeks, but if neglected, it may continue for months and perhaps years. The morbid action passing up into the uterus may exist as an endometritis long after the vaginal trouble has disappeared; or it may pass into the bladder and excite cystitis; or down their narrow ducts into the vulvo-vaginal glands.

Dr. Noeggerath, in 1873, published a remarkable paper on "Latent Gonorrhœa in the Female Sex," in which he declares, that certain morbid phenomena in the female organs, which have hitherto been considered as separate, and treated independently, possess a common basis from which they collectively and separately take their origin—this being nothing more nor less than gonorrhœa. "I have," he says, "undertaken to show that the wife of every husband, who, at any time of his life before marriage, has contracted a gonorrhœa, with very few exceptions, is affected with latent gonorrhœa, which sooner or later brings its existence into view through some one of the forms of disease about to be described. . . . I believe I do not go too far when I assert that of every 100 wives who marry husbands who have previously had gonorrhœa, scarcely 10 remain healthy; the rest suffer from it or some other of the diseases which it is the task of this paper to describe. And, of the ten that are spared, we can positively affirm that in some of them, through some accidental cause, the hidden mischief will sooner or later develop itself."

The diseases to which this author refers as remote consequences of latent gonorrhœa are perimetric inflammations, both acute and chronic, ovaritis, and catarrh of the genital tract. These when once excited are, he declares, incurable, and render the life of the female one of misery and danger. These women rarely become pregnant, or, if they do so, either miscarry or bear only one child. To sustain this assertion he gives the statistics of 81 cases, of which 31 only became pregnant. Of the 31, only 23 went to full term; 3 were prematurely delivered, and 5 aborted. Of the 23 who went to full term, 12 had one child each during married life; 7 had two children each; 3 had three; 1 had four; and among the 23 women there were five abortions. He asserts that although apparently cured, gonorrhœa may exist both in the male and female an entire lifetime in a latent form, which may at any moment burst forth into acute gonorrhœal inflammation, or excite serious uterine or periuterine inflammation.

Since the appearance of these views I have considered this subject very carefully. While I admit, that even years after a gonorrhœa has been considered cured some lurking infectious element dammed up perhaps behind a stricture may transmit the disease, I have failed to get evidence of the truth of Dr. Noeggerath's assumptions as to the universality of such transmission of disease. Were they true indeed, it appears to me that a healthy woman would be a rare exception to a very general rule.

Complications.—The complications of gonorrhœa in the female are numerous and important. The disorder sometimes becomes an exceedingly grave one, and, in some instances, destroys life. It may induce the following results :—

- Buboes ;
- Vulvar abscesses ;
- Cystitis ;
- Inflammation of vulvo-vaginal glands ;
- Endometritis ;
- Fallopian salpingitis ;
- Pelvic peritonitis.

Mr. Salmon,¹ who first drew attention to inflammation of the vulvo-vaginal glands as a result of the disease which we are considering, declares that it is quite common.

The passage of the disordered action into the uterus, through the tubes, and into the peritoneum is the most dangerous of all its consequences, and produces great risk to life from the pelvic peritonitis which it excites.

Granular Vaginitis.

Definition and Synonyms.—This variety of vaginitis was first described by Ricord, under the name of Psorolytric. In 1844, M. Deville,² a pupil of Ricord, described it fully, and it was subsequently treated of by Blatin, Guérin, and others, under the names of papular, glandular, and granular vaginitis.

Pathology.—By these writers it was regarded as an hypertrophy of the muciparous follicles, lying embedded between the rugæ of the vagina. This hypertrophy, it was thought, was generally the result of pregnancy, though it was admitted that it might arise from simple or specific vaginitis. Many recent writers deny the existence of this variety of vaginitis, and view it only as an hypertrophy of vaginal papillæ, the result of the forms of the affection already mentioned. Thus Dr. Bumstead,³ in speaking of granulations found in the vagina as a result of vaginitis, says, "They have been erroneously regarded by Dr. Deville as peculiar to the vaginitis of

¹ Bumstead on Venereal Dis., p. 172.

² Archiv. de Méd., 4th series, t. v.

³ Op. cit.

pregnant women." Scanzoni¹ and West² both deny its existence, and upon the same ground, viz., the fact that Mandl and Kölliker have discovered very few mucous follicles in the vaginal mucous membrane. When, however, in opposition to the negative fact that these excellent observers, supported by Robin and Sappey, *have not* discovered these glands, is arrayed the positive fact that Huschke, Jamain, Richet, Becquerel, Guérin, and others *have* done so, the grounds for denial must be admitted to be insufficient. Even if such evidence of the propriety of admitting this variety of vaginitis did not exist, clinical research would corroborate the truthfulness of the deductions of M. Deville.

The disease is characterized by hemispherical granulations, about as large as half a millet-seed, scattered thickly over the mucous membrane of the vagina and over the cervix uteri. This variety of the disease appears to bear the same relation to simple vaginitis that follicular vulvitis does to the purulent form of that affection. I once saw a case of granular vaginitis, so striking in its features that the attending physician had expressed to the patient's family his fears that malignant disease was developing. He became at once convinced of his grave error, when shown a description of the disease which really existed, and with which he had never before met. Although I believe in the validity of this variety of vaginitis, I must declare that I have rarely met with it out of the condition of pregnancy.

Causes.—The glandular hypertrophy which gives to the disease its characteristic features and name, generally results directly from pregnancy, though it may be produced by either simple or specific vaginitis. Some women suffer from it in successive pregnancies.

Symptoms.—It demonstrates its presence by the symptoms already recorded as characteristic of simple and specific vaginitis. With these, pruritus vulvæ and a lichenous eruption about the pubes are apt to appear. As parturition comes on and puts an end to pregnancy, it usually disappears, very often without any treatment whatever.

Treatment of Vaginitis.—The treatment of the various forms of this disease is so similar that it may be described under one head, modifications being suggested for those cases which have assumed a subacute or chronic aspect. If the case be one of acute character, the patient should be kept perfectly quiet in bed, and locomotion and sexual intercourse strictly interdicted. Pain should be relieved by opiate or other anodyne suppositories placed in the rectum, and febrile action prevented or combated by mild, unstimulating diet and refrigerants. Every fifth or sixth hour the patient, placing under the buttocks a bed-pan, upon which she lies, and between the thighs a vessel of warm water, should, by means of a syringe,

¹ Diseases of Females, Am. ed., p. 529.

² Diseases of Women, Eng. ed., p. 640.

throw a steady stream against the cervix uteri for fifteen or twenty minutes, or even for a longer time. The methods most appropriate for syringing the vagina are fully described in chapter four. The bowels should be kept in a lax condition by saline cathartics, and the ardor urinæ relieved by the use of alkaline diuretics. Should inflammatory action run very high, and much pain be experienced, great benefit will be derived from the free administration of opium, which should be given until complete quiescence of the nervous system is accomplished.

When the severity of the symptoms has been relieved by this combination of general and local means, Sims's small speculum should be passed, the cervix and vaginal walls cleansed with absorbent cotton, the whole canal washed over with a solution of nitrate of silver, ℥j to ʒj of water, and a tampon of carbolized cotton soaked in glycerine applied, so as to prevent all contact of the opposing walls. This should be renewed once in every twenty-four hours. But lengthy renewal will not be found necessary, for cure will, as a rule, very soon occur.

CHAPTER XIV.

ATRESIA OF THE GENITAL TRACT AND RETENTION WITHIN IT OF MENSTRUAL BLOOD AND OTHER FLUIDS.

Definition and Synonyms.—The term atresia, derived from *a*, privative, and *τραω*, "I perforate," signifies an imperforate condition, and should in its strict import be limited to complete closure of an aperture or canal. Any obliteration or occlusion which is so extreme as to remove the case from the class of strictures, and yet is not complete, should be styled stenosis. The genital canal of the female may be imperforate at the vulva, in the vagina, or in the canal of the uterus itself.

Any one of these atresia may act as a barrier to the escape of menstrual blood, and create a dangerous retention of that fluid with coincident overdistention of the vagina, uterus, and Fallopian tubes, which may become so excessive as to end in rupture, peritonitis, and death. As this is the chief relation in which they are to be considered, it seems best to study the varieties of atresia under one head.

Congenital atresia never attracts notice until puberty has arrived, and then an examination is instituted on account of non-appearance of the menstrual flow, the presence of an abdominal tumor caused by uterine or vaginal distention, or the suspicion of pregnancy, some of the prominent signs of which are present under these circumstances. Acquired atresia is suspected for the same reasons.

In general terms it may be stated that the higher up the atresia be, the greater the danger arising from its existence. Thus, an atresia of the hymen is the least dangerous of all; one as high as the os internum uteri the most so. The reason for this is evident: the former has above it, for accommodation of retained fluid, the distensible vagina and cervical canal; the latter has only the uterus itself. Then, too, distention of the vagina produces less marked influence upon the Fallopian tubes than that of the uterus. Distention of the latter does not, it is now thought, cause a reflux through the tubes, but creates a species of vicarious menstruation from their walls. This gives rise to hæmato-salpinx, which so often ends in rupture of the tube that that accident should be feared as one of the most decided dangers connected with the condition.

This tubal rupture may occur in two ways: first, sudden emptying of the uterine contents creates uterine contraction which at once extends to the muscular fibres of the tubes, and rupture is the result; or, previous peritonitis having fixed the tubes, descent of the uterus drags upon them so powerfully as to cause their rupture, or laceration of the false membranes which hold them.

It must not be forgotten, however, that, although it is an exception to the rule, vaginal atresia may cause distention of the uterus and tubes by gradually dilating the uterine tract, and before every operation this effect should be considered.

Atresia of the Uterus.

Definition and Frequency.—This consists in closure of the canal of the cervix so that no fluid can escape. In its partial form, that of stenosis, it is by no means rare, but fortunately complete atresia is decidedly so.

Varieties.—Uterine atresia may be either congenital or acquired. When it is congenital it may exist at the os internum, at the os externum, or involve the whole cervical canal. Sometimes the cervix is exceedingly small while the body is greatly distended by fluids.

When the condition is acquired, it may also be limited to one or both ora or involve the whole extent of the canal. The causes which most commonly induce it are the following:—

- The use of caustics;
- Cervical endometritis;
- Irritation from neoplasms in the canal;
- Senile atrophy;
- Sloughing after parturition;
- Amputation of uterine neck;
- The use of the steel curette.

The first of these is a very common cause of severe stenosis, and sometimes produces even complete atresia. The second, involving the Nabothian follicles, sometimes ends in adhesive inflammation. The third

I have seen produce the condition in three cases. The fourth is so very common in old age that Hennig declares, that, out of one hundred women who had passed fifty years of age, about twenty-eight, over a quarter, suffered from it. The fifth and sixth are often met with as causes, and the seventh I once had occur in my own practice.

Results.—It might at first thought be supposed that uterine atresia occurring after the menopause would be, as it usually is before puberty, a matter of no moment. As a rule this is so, but there are exceptions to both rules. In the old woman a watery secretion sometimes takes place, giving rise to hydrometra; suppurative action may occur, creating pyometra; and decomposition of the imprisoned fluid gives rise very rarely to a development of air, physometra. Very rarely hydrometra is found before puberty and hæmatometra in old women.

The evils which result from uterine atresia are—

Hæmatometra;
Hæmatosalpinx;
Hydrometra.

And the consequences of these, if they be left uninterfered with, may be—

Peritonitis;
Pelvic hæmatocele;
Rupture of the vagina, uterus, or tubes;
Septicæmia.

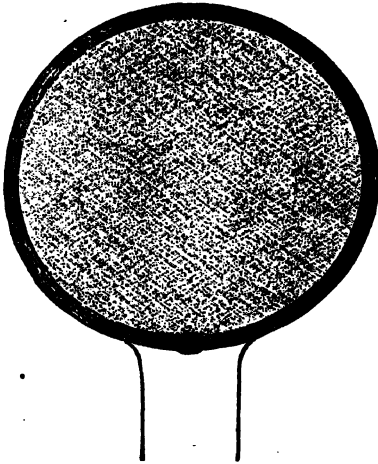
Prognosis.—Whatever course be pursued, in a patient suffering from uterine atresia with retention of menstrual blood, the prognosis is necessarily a grave one. Non-interference may, and probably sooner or later will, end in the development of one of the accidents just recorded. Surgical interference, on the other hand, is attended by the dangers of rupture of the tubes, laceration of the false membranous attachments, and the development of septicæmia from the admission of air to the distended uterine cavity.

Diagnosis and Differentiation.—It is sometimes exceedingly difficult to differentiate retained menstrual blood in the uterine tract from fibrous tumors, malignant growths, ovarian cysts, hæmatocele, and pregnancy. The rational signs which enable us to do so are these: in all but the last, menstruation is commonly increased, while here it is suppressed; the tumor is surely uterine and not ovarian, retro-uterine, or ante-uterine; it has come on slowly, and not suddenly as the tumor of hæmatocele does, and at every monthly epoch an increase of inconvenience is noticeable from its presence. Physical signs yield more important results still. If an attempt be made cautiously to pass the uterine sound or probe, the cervical canal will be found to be closed. This constitutes the crucial test.

The diagrams, Figs. 81 and 82, show the varieties of hæmatometra occurring in cervical atresia.

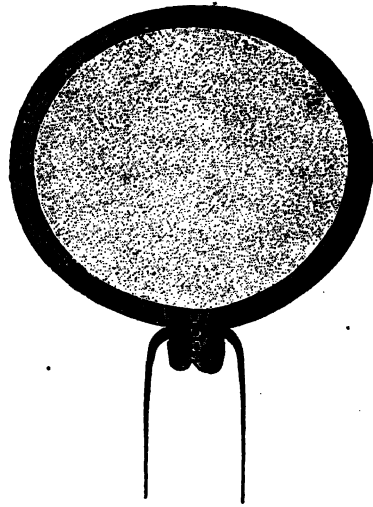
Fig. 83 presents an instance of atresia in one of the uteri in a case of double uterus, the other being free to perform all its functions.

FIG. 81.



Uterine atresia at os externum.

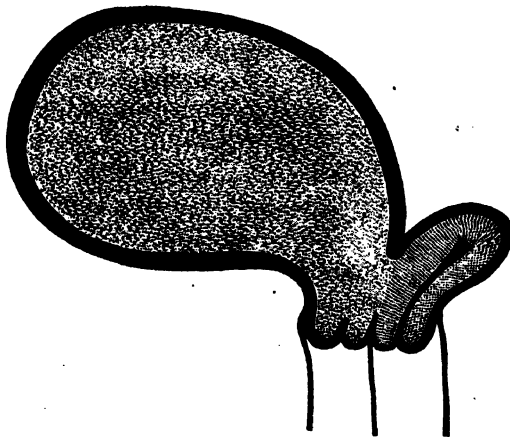
FIG. 82.



Uterine atresia at os internum.

In the last case menstruation would be regular, the uterus be susceptible of recognition by conjoined manipulation and the passage of the sound to

FIG. 83.



Atresia in one-half of a double uterus.

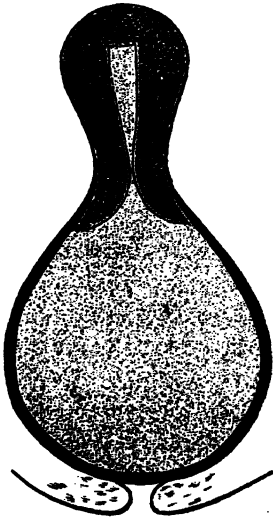
the fundus, while one half of the abnormally developed organ would present the large tumor seen in the diagram. Diagnosis would be possible here only by very careful conjoined manipulation.

Atresia of the Vagina.

Like the uterus the vagina is in foetal life created from the approximation and amalgamation of the Müllerian ducts upon the median line. In the former a great variety of congenital malformations are the result of arrest of development of these parts. So is it also with the latter; the chief of its anomalies being double, unilateral, diminutive, and rudimentary vagina, or no vestige of it may exist. The condition which is now to engage our attention may be due to such congenital arrest of development or to accidental causes developing after adult life has been reached.

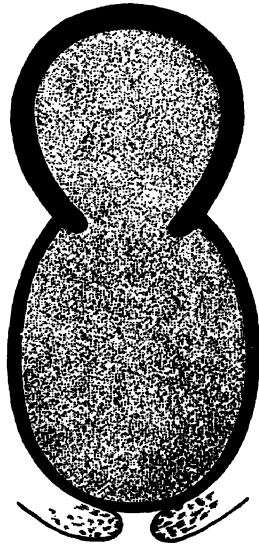
History.—Hippocrates¹ refers to this condition as a result of labor; Aristotle speaks of the accidental and congenital varieties; Celsus devotes a chapter to it, and it claims attention, as we come down to subsequent times, from Aëtius, Avicenna, Lanfranc, Wierus, Ruysch, Mauriceau, and Roonhuysen. Heister and Boyer advanced our knowledge of it, but it was left for the daring enterprise of Dupuytren, Amussat, and Debrou, to place its cure among the achievements of modern surgery.

FIG. 84.



The vagina distended by blood from imperforate hymen.

FIG. 85.



Vagina and uterus both distended with blood consequence of an impervious hymen.

Varieties.—There may be no trace of the canal, the ducts of Müller seeming to have failed entirely to develop; there may be a distinct fibrous cord marking the site which it should have occupied, some slight develop-

ment appearing to have occurred; development may exist for some distance up the canal, failure having taken place above; or one Müllerian duct has developed in part above and another below, giving two cul-de-sacs separated from each other by impervious tissue. The whole canal is not rarely well developed, while the hymen guards its outlet as an unyielding and completely closed obturator membrane. The last of these vaginal atresiae, and, fortunately, the most frequently met with, is depicted in Figs. 84 and 85.

Not only is the operation for relief in such a case much more simple than in other varieties of atresia, the uterus is usually not involved in the dilatation and the danger of trouble after operation is not so great.

Pathology.—As a result of injury from mechanical, chemical, or pathological agencies, a vagina once fully developed may close from adhesion of its walls; its calibre may be diminished by absolute removal of its component structures in consequence of ulceration or sloughing; or the other parts of the female genital system may go on to full development while this is arrested in its growth and remains a fibrous cord instead of a distensible canal.

Causes.—The following special causes may be enumerated as productive of it:—

- Impervious hymen;
- Arrest of development of vagina;
- Prolonged and difficult labor;
- Chemical agents locally applied;
- Mechanical agencies exciting inflammation;
- Sloughing, the result of impaired vitality;
- Syphilitic or other extensive ulcerations.

One of the cases which have come under my observation resulted from syphilis; several from prolonged labor; one from the accidental passage of a sharp bit of wood up the vagina; another from retention of the fetal body for two hours after delivery of the head; and one from a tampon of cotton saturated with persulphate of iron. Among the causes of sloughing from impaired vital force should be especially mentioned the continued and eruptive fevers, typhus fever, scarlatina, variola, etc.; and cholera as a cause of the accident is referred to by M. Courty. Dr. Trask, of Astoria, N. Y., has written an excellent article upon this subject, his conclusions being based upon thirty-six cases, of which fifteen were due to prolonged labor.

Symptoms.—The disorder will demonstrate its existence only by incapacitating the vaginal canal for its important functions, copulation and transmission of menstrual blood. Should it occur in one too young or too old to require such functions from the vagina, no suspicion will be aroused as to its existence. The notice of the practitioner will generally be called to the patient by amenorrhœa or by an inability to perform the act of

coition. Should the menstrual hemorrhage have taken place, a large amount of blood will generally be found confined above the constricted part of the canal, and violent contractions will have demonstrated the efforts which the parts have made to expel the accumulation. Besides these, no other rational signs will show themselves, but they will be sufficient to urge upon the attendant the necessity for a physical exploration.

Physical Signs.—The patient being placed upon the back, and vaginal touch attempted, entrance of the finger into and up the vagina will be found to be impossible. Investigation will prove that this is not due to vaginismus, or adhesion of the labia majora, and rectal touch will, in cases involving the vagina, usually discover that canal running up the pelvic cavity as a fibrous cord, though sometimes no trace of it will be found.

Results.—From the mere occlusion of the vagina there is no immediate or direct derangement. But in cases where menstrual blood is poured out by the vessels of the uterine mucous membrane, and is accumulated at each monthly epoch in the portion of the canal above the stricture, or in the uterus, which is dilated by its retention, rupture of these organs or of the Fallopian tubes may occur; discharge from these tubes into the peritoneum may take place, and pelvic hæmatocele be the consequence; or the retention of the menstrual flow may produce all those nervous and cerebral symptoms so characteristic of such an occurrence.

Prognosis.—The prognosis of these cases, as regards the possibility of removal of the abnormal state, will depend upon the extent and completeness of the obliteration and destruction of tissue. The smaller the amount of vaginal tissue found by rectal touch and examination by a sound in the bladder to exist, and the more complete and extensive the adhesion of the vaginal walls, the more closely will the case resemble one of entire absence of the vagina. The prognosis as to permanent cure will greatly depend upon the patient. If she be a woman of good sense and perseverance, and keep up, after operation, distention by the vaginal plug, not for months, but for years, the result is often a very good and permanent one. If, on the other hand, she ignores the risk attendant upon the cessation of its use, contraction will probably recur. During the process of making a canal between the bladder and rectum, one of these viscera is very apt to be cut into, or the peritoneum may be opened at the fornix vaginae. If a depot of menstrual blood be reached and evacuated, death is by no means rare from septicæmia, purulent absorption, or a septic endometritis which ends in lymphangitis, or in salpingitis and peritonitis.

The prognosis is greatly governed, too, by the variety of atresia with which we deal. Occlusion due to impervious hymen warrants a very favorable prognosis; that arising from accidental causes, likewise; that from congenital cause in which the uterus and vagina can be distinctly discovered as existing, a less favorable one; while that due to absence of vagina and uterus, as far as clinical observation can verify the fact, a

well-nigh hopeless one. In other words, the more complete the absence of vaginal tissue and that of other organs of the pelvis, the more unfavorable will be the prognosis as to recovery from surgical interference.

Should deformity of the external genitals exist, the uterus not be discoverable, and no signs of distress at menstrual epochs show themselves, it may be concluded that the case is one of absence of the vagina, and not of complete atresia. But, thanks to the boldness of Amussat, even absence of the vagina does not preclude the possibility of establishing an artificial canal. The importance of the differentiation consists in the fact that the surgeon should in such a case be doubly cautious and circumspect in his efforts, and guarded in his prognosis. It may at first thought appear that in case there be no evidence of the existence of uterus or ovaries, and no inconvenience be experienced from retention of menstrual blood, it would not become necessary to resort to an operation to render the vagina pervious. But so great is the unhappiness often resulting from incapacity of the woman for the sexual act, that this becomes a reason for her to demand the resources of art, and a valid ground for interference on the part of the surgeon. If no such demand is made for surgical interference, it would, in such a case as that just depicted, be an unwarrantable procedure. Not only is the patient exposed to danger without sufficient indication; she is thus exposed for the opening of a canal which has a marked tendency to close completely.

The rule with reference to operation for atresia due to congenital closure or absence of the vaginal canal itself should, it seems to me, be this: it should be resorted to (a) if menstrual blood be imprisoned; (b) if a uterus can be distinctly discovered and the patient be suffering from absence of menstruation; (c) if the necessity for sexual intercourse be imperative: it should be avoided unless demanded by one of these considerations.

Treatment.—To surgery alone can we look for any hope of recovery or of safety in cases of atresia of the female genital canal. I shall treat of this part of the subject, as it applies to all varieties of atresia—uterine, vaginal, and their subdivisions. It is evident that, to do justice to it, operative interference must be described as applying to the following cases :—

- 1st. Where there is atresia of the uterine neck.
- 2d. Where there is atresia of the hymen alone.
- 3d. Where the vaginal canal is closed only for a small portion of its course.
- 4th. Where there is complete closure or entire absence of the vagina.

Where there is Atresia of the Uterine Neck.—The operator should decide, by careful conjoined manipulation, as to the degree of uterine distention which exists above the cervical closure. If this be slight, the obstruction may at once be overcome; if it be very decided, it will be

safer to draw off the fluid gradually, in order to avoid violent uterine contractions, which may, as Barnes¹ suggests, force fluid from the cavity of the uterus through the tubes, or affect the tubes by sympathy, or by sudden dragging downwards. Let us suppose that the uterine tumor is quite large; the patient should be placed in Sims's position, and, his speculum being introduced, the cervix uteri should be caught with a tenaculum, and the point at which puncture is to be practised carefully selected. The smallest needle of Dieulafoy's aspirator should be, with the tube of the instrument attached to it, fixed upon this point, and then, the vagina being filled with carbolized spray, it should be passed into the uterus and the blood drawn off by suction. When the uterine tumor is diminished about one-third, the needle should be rapidly withdrawn and the vagina tamponed with carbolized cotton, saturated at the moment of use with carbolized water.

This tampon may be left in place for forty-eight hours and then removed, and in a week or two, as seems best to the operator, this process of gradual withdrawal of the retained menstrual blood may be repeated, until the uterus has become small and nearly empty. Then, or at once, in case the uterus be not originally much distended, the operation for cure of the atresia may be practised. The following method I have resorted to in two cases with excellent results, and it appears to me to recommend itself on account of its simplicity and safety. The patient being arranged as for aspiration which has just been described, under a very slight carbolized spray which does not obscure vision, the cervix should be steadied by a tenaculum and a long exploring needle passed into the uterine cavity. The sense of resistance overcome, and the escape of a drop of blood will assure the operator of his success in reaching it. Then putting into the gutter of the needle a delicate tenotome, he pushes it upwards to the required distance to open the canal. This section is repeated on the other three sides, the cavity of the uterus is syringed out with carbolized water very gently forced from a small syringe; a small glass plug is inserted in the cervix, and the vagina tamponed as after aspiration.

Where Vaginal Atresia is due to closure by a Diaphragm or by the Hymen.—The same rule of practice should be observed, and the same antiseptic precautions adopted. If gradual evacuation be resorted to and septic fever begin to develop, recourse should at once be had to the rapid method. Gradual evacuation should be accomplished exactly as in uterine atresia, for it is always safe to conclude that with vaginal distention there is probably uterine. Section of the hymen may be practised in two ways: first, by passing the exploring needle, sliding a knife up its groove and making a free crucial incision; second, by catching the bulging septum, as Puesch has advised, and cutting out a large circular piece.

¹ Dis. of Women, 2d Am. ed., p. 214

After the occluding septum has been destroyed, the cavity above should be freely syringed out with carbolized water, and Sims's glass vaginal plug introduced.

Where there is entire Closure or Absence of the Vagina.—In the first case a hard, fibrous cord will mark the position of the vagina; in the second no indication of it will be found, and a canal must be created between rectum and bladder, out of a space occupied by areolar tissue. Should accumulation of menstrual blood have occurred, the operation will prove much easier than if it has not, for its greatest difficulty consists in finding the cervix uteri, and in cases of accumulation this is an easy matter.

The other operations for atresia become insignificant when compared with this one, which as Courty well observes especially calls for an "alliance of caution with skill."

Before operation, if there be any doubt as to the presence of the uterus or as to its size or position, the hand, except the thumb, may be introduced into the rectum, after stretching the sphincter, and a full and satisfactory exploration made.

If on account of great obesity it be found impossible to appreciate by conjoined manipulation the extent of tissue existing between the bladder and rectum, and consequently in the course in which the vagina is to be opened, or perhaps absolutely constructed, the urethra may be rapidly distended by sounds so as to admit the finger to the bladder. Then the index and middle fingers of the right hand being carried up the rectum, and the index of the left introduced into the bladder, this important point may be ascertained.

Before operating, the patient should be anæsthetized, and the bladder and rectum emptied of their contents. She should be placed in the lithotomy position upon a table before a good light, and the operator should have four assistants at his disposal.

The operation may be performed by two methods: that of Dupuytren (1818), which consists of breaking a passage by the finger, cutting obstructions which cannot thus be overcome, and syringing out the cavity afterwards, the whole operation being finished at one sitting; and that of Amussat (1832), which consists of working with the finger and dull instruments, overcoming resistance by pressure rather than by incision, and completing the operation not in one but in several sittings.

Dupuytren's Operation.—Barnes¹ expresses a decided preference for this over Amussat's operation, and my experience leads me to agree with him. Courty² thus describes Dupuytren's procedure:—

"The procedure devised by Dupuytren, about the year 1817, consists in the combined use of a cutting instrument and tearing of the cellular

¹ Diseases of Women, p. 212, 2d Am. ed.

² Mal. de l'utérus, p. 381. 1866.

tissue. It is accomplished in a single sitting, and appears to me preferable to the preceding one (Amussat's).

"The following is the description of it, with the modifications which M. Puesch has added :—

"After having arranged the woman in a convenient position, the bladder is emptied by means of a male catheter which is given to an assistant who holds it turned upwards. It is not removed during the operation except where the obliquity of the part would render it troublesome. The index finger of the left hand is then carried into the intestine as far as possible, in order to serve as a guide for the bistoury and at the same time as a protection to the rectum. After these preliminary steps the operator, placed between the thighs of the patient, makes a transverse incision at the centre of the obstacle, or in the vulvar orifice if the vagina is completely wanting; if the cellular tissue is lax, he can tear with his finger, the sound, or the handle of the bistoury the vesical and rectal walls till he reaches the tumor; if it is tense or too resistant, the surgeon dissects by gentle efforts, separating the tissues with the handle or the finger rather than cutting them, and, if it be necessary, breaking them down at the edges with a button bistoury. In each case he proceeds slowly and carefully, stopping from time to time to examine with the finger and be certain at what distance those organs are situated which it is necessary to avoid. When the canal which has been reopened will admit the index finger easily, and when a more distinct perception of fluctuation announces the proximity of the sanguineous collection, the operator is warranted in plunging a trocar into this, and the pouring out of a syrupy, brown liquid, like the lees of wine, will show that the end has been reached. The pressure upon the uterus is then stopped, a large part of the fluid is allowed to flow away through the canula, and then, substituting for this instrument a perforated sound, the operator increases the size of the opening by numerous incisions upon its sides and thus renders certain the final result. Afterwards he carries a gum-elastic sound into the uterine cavity, and throws through this, but with very little force, several injections of warm water. The dressing having been finished, the parts are sponged and dried, and the patient is placed in a bed protected by cloths so as to prevent the bedding from being soiled by the mucous and sanguinolent discharges which flow during the first days."

Amussat's Operation.—The labia being retracted by the fingers of two assistants, holding the thighs, the finger of a third,¹ who kneels by the side of the operator, is introduced into the rectum, with its palmar surface looking backward. A steel sound is then passed into the bladder, which the assistant, on the left of the woman, holds in the right hand. At this moment, this assistant holds the woman's knee under his left arm, retracts

¹ The arrangement of assistants is my own.

the labium by his left hand, and holds the sound in his right hand. The sound he must press upon gently, so as to let the operator's finger recognize its presence as it works its way up the vagina. By means of a pair of curved scissors, conducted up to the point of obliteration upon one finger, the tissue between the urethra and rectum should then be very cautiously cut, in a transverse direction, and the finger introduced into the opening made. This is really almost all the cutting which should be done; the rest should be accomplished chiefly by the finger. This, by the sense of touch, tells the operator exactly how near he approaches the sound in the bladder on one side, and the finger in the rectum on the other. To one who has not tried this plan, the facility with which the adherent vaginal walls may be separated, or a new tract torn through the tissues, will be surprising. Now and then, the application of the scissors or of a curved, probe-pointed bistoury will become necessary, but every such necessity constitutes an element of danger.

As the operator approaches the regions around the cervix, he may become bewildered as to its position. Under these circumstances, let him make pressure by his unoccupied hand, over the hypogastrium, so as to force the hard cervix down upon his finger, or stop and make a careful exploration by conjoined manipulation, two fingers in the rectum and one hand over the abdomen. Having thus reassured himself he may proceed.

However the operation for atresia be performed, there is always great danger of relapse, and unless special means be adopted for maintaining the perviousness of the canal, it will probably occur. To prevent this unfortunate result the French operators,¹ to whom we are indebted for most of our surgical resources in this difficulty, used bougies wrapped with linen, tampons of lint, and India-rubber bags filled with air; but we have a much cleaner and more effectual means for doing it, in the glass vaginal plug of Sims.

If menstrual blood have been imprisoned above the strictured portion of the vagina, the canal should, for a fortnight after operation, be kept scrupulously clean by injections of tepid water practised twice a day. If the uterus and tubes have been distended by retained fluid, the cavity of the former should, just after the operation, be carefully washed out with tepid water very slightly impregnated with carbolic acid, tincture of iodine, or Labarraque's solution of soda, as advised by Courty. The patient should then be kept as quiet as possible in the recumbent posture, and slightly under the influence of opium.

The period at which operation should be resorted to for congenital atresia is a subject of importance. Velpeau advocates operating in infancy, but Peusch, Boyer, and others regard the age of puberty and ap-

¹ Courty, *op. cit.*, p. 386.

proach of menstruation as a more appropriate time. Should the menopause have arrived, no operation will be called for, unless hydrometra exist or marital relations demand it.

It should not be forgotten that delay in interference is often very disastrous during the period of menstrual activity, for lives have, in numerous instances, been destroyed by rupture of the Fallopian tubes, and even of the uterus itself, as seen by Peusch. This observer drew his conclusions from 258 cases of atresia, in 18 of which rupture of the Fallopian tubes from distention by menstrual blood occurred. In one instance of atresia, I saw an hæmatocele the size of an infant's head result from discharge of blood from the tubes into the peritoneal cavity. It is possible that the mental emotion of the patient, and her struggles during the operation, may account for the escape of blood into the peritoneum as noted by Bernutz. Hence, every effort should be made to avoid these, by complete anæsthesia, and care should be taken not to allow of pressure upon the uterus either intentional or accidental.

In cases in which vaginal and uterine atresia have existed together, and the uterus only is distended by blood, there can be no good reason urged for completing the removal of both atresia at one sitting. It is far safer to secure complete liberation of the uterine neck, and perviousness of the vaginal canal, unless delay be absolutely dangerous, and then, after the dangers arising from this procedure have passed away, to perform the other operation. Certainly, combining the two would not diminish the danger of either, while delay would not ordinarily increase the risk in any way, since the closure of the cervix is so complete as entirely to exclude the admission of air.

Lefort has advised and practised the creation of a new vagina by electrolysis. The following is the description given of the procedure by Le Blond in his admirable treatise upon Gynecological Surgery.¹ The operation rests upon the fact that a mild continuous current of electricity passing through tissues by means of a metallic pole destroys them. "M. Lefort employs for the purpose a cylinder of boxwood, the extremity of which ends in a copper bulb connected with the negative pole of a pile of Morin elements in sulphate of copper. The circuit of the pile is established by applying a metallic plate communicating with the positive pole on the stomach with the interposition of compresses soaked in a solution of sodium chloride. The apparatus is put in position only at night. At the end of a short time the existence of a canal of seven or eight centimetres in depth is found to exist, then, when the uterine neck is reached the menstrual flow occurs freely." I have no experience in this method, but Le Blond speaks with confidence concerning it, and gives it preference over the surgical procedures which have been detailed.

¹ *Traité Elementaire de Chirurg. Gynecol.* Paris, 1878.

CHAPTER XV.

FISTULÆ OF THE FEMALE GENITAL ORGANS.

Definition.—As a result of certain traumatic and morbid processes, the continuity of the vaginal and uterine walls may be destroyed and communication established with adjacent viscera. To the tracts or passages thus opened, the name of fistulæ has been given.

Varieties.—These communications connect the vagina or uterus with some viscus in immediate proximity, for the natural outlet of which they act vicariously, or with some neighboring part, as the peritoneum, the vulva, or the pelvic areolar tissue. Their varieties have received the following descriptive appellations :—

Urinary Fistulæ.

- Vesico-vaginal fistula;
- Urethro-vaginal fistula;
- Vesico-utero-vaginal fistula;
- Vesico-uterine fistula;
- Uretero-uterine fistula;
- Uretero-vaginal fistula.

Fecal Fistulæ.

- Recto-vaginal fistula;
- Entero-vaginal fistula;
- Recto-labial fistula.

Simple Vaginal Fistulæ.

- Peritoneo-vaginal fistula;
- Perineo-vaginal fistula;
- Blind vaginal fistula.

Urinary Fistulæ.

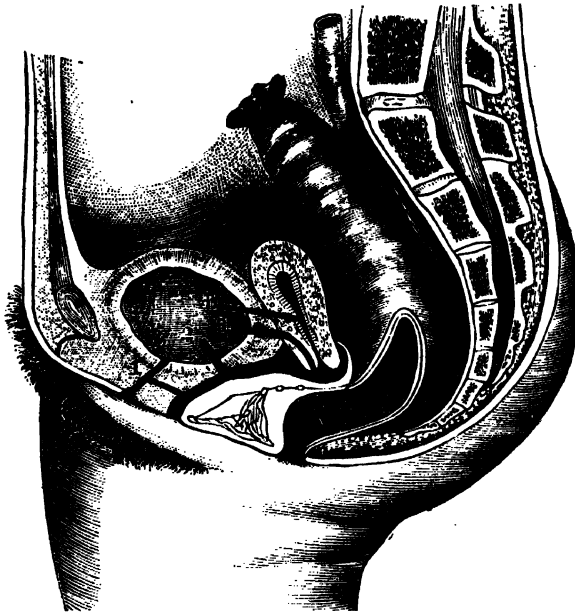
Urinary fistulæ may occur on any part of the anterior surface of the genital canal intervening between the vulva and fundus uteri. Fig. 86 displays the points at which they are usually observed.

Vesico-Vaginal Fistula (2) is a communication between the bladder and vagina, either at the trigone or the bas-fond, which may involve only enough tissue to admit a small probe, or entirely destroy the vesico-vaginal wall. Such an opening may be oval, angular, elliptical, or linear in shape,

and its borders may be thick or thin, soft or indurated, rough or smooth, pale or vascular.

Urethro-Vaginal Fistula (1) resembles that just mentioned, except in the fact that the destruction of tissue which has produced it involves the wall of the urethra, and not that of the bladder.

FIG. 86.



Varieties of urinary fistulæ: 1. Urethro-vaginal fistula; 2. Vesico-vaginal fistula; 3. Vesico-utero-vaginal fistula; 4. Vesico-uterine fistula.

Vesico-Uterine Fistulæ (4) are those in which there is a direct communication between the bladder and uterus above the point of vaginal attachment. The vagina is consequently not involved, and the urine passing into the uterus escapes at the os.

Vesico-Utero-Vaginal Fistulæ (3) are those in the production of which a lesion occurs in both uterus and vagina, as is imperfectly shown by (3). At the vaginal junction there is a perforation of the bladder, but this does not penetrate to the cavity of the uterus. A canal is created in its wall, and through this the urine escapes into the vagina. The last two forms of fistulæ were first accurately described by Jobert, who made of the last, two varieties, superficial and deep. In the first a canal is channelled out on the vesical surface of the cervix uteri; in the second, the cervix is to a greater or less extent destroyed by the process of sloughing, and through it the urine passes. In the first form the lesion is chiefly vesical and uterine, the vagina not being much injured; in the other it affects three

organs, the bladder, the uterus, and the vagina. All these forms of fistulæ may thus be grouped into classes :—

- 1st Class. Those involving the urethra.
- 2d Class. Those involving the base of the bladder.
- 3d Class. Those involving the uterus.
- 4th Class. Those involving the ureters.

In some cases, however, multiple fistulæ exist, and no special classification can be made.

CAUSES.—Any influence which is capable of destroying the continuity of the vaginal walls, either by mechanical, chemical, or vital action, would of course give rise to this condition. Those which are found in actual practice to have proved most commonly efficient, are the following :—

- 1st. Prolonged or very severe pressure ;
- 2d. Direct injury ;
- 3d. Ulceration or abscess.

Pressure, which is more frequently a cause than any of the others mentioned, is generally produced by the child's head remaining too long in the pelvis during labor. This is beyond all doubt the most prolific source of the accident, though it may also attend a rapid labor in which the vagina has been pressed against some point of the pelvis with great violence. Such pressure produces sloughing of the part of the vagina receiving it, and at that spot a deficiency of tissue in future exists, which constitutes a fistula. The process of sloughing occurs from pressure of the foetal head, exactly as a bedsore takes place in one who lies for too long a time in the same position, the sequence being, disturbed and retarded circulation, impaired nutrition, and local death. Or a puerperal vaginitis may be established, which runs a violent course, and may end in sloughing after several weeks' duration.

An involuntary flow of urine usually announces the existence of a fistula within three or four days after delivery, though, when it is the result of injury inflicted by instruments employed in delivery, it may occur immediately. On the other hand, the separation of the slough, which will entail deficiency of tissue and its results, may not take place until much later, when perhaps all fears are allayed, and the case is regarded as progressing favorably. Jean Louis Petit records one case developing its symptoms after a month ; Jobert one in which on the twenty-second day after delivery the slough was found at the mouth of the vagina ; Adler, of Iowa, one in which after twenty-nine days the slough was only partially separated ; and Agnew, of Philadelphia, another, in which it separated on the twenty-first day.

Other agencies which may create fistulæ, but which have been rarely noticed to do so, are pessaries, stones in the bladder, fecal accumulation, etc.

Direct injury may produce the accident by contusing or lacerating the vaginal walls, as may occur during delivery by the forceps or craniotomy. That these operations when carelessly or unskilfully performed may produce a fistula, no one will pretend to deny, but there can, with the evidence now recorded, be no doubt that they have often been credited with unfortunate results which were in reality due to tardiness in their employment. Very often, where a labor has been allowed to be prolonged in the second stage until the vitality of certain points in the vagina has become irremediably impaired, and the process of sloughing has been already inaugurated, subsequent delivery by forceps or craniotomy has been regarded as producing fistula. Under such circumstances the real morbid agency, prolonged and violent pressure, is lost sight of, and the more palpable agents, the instruments employed, are viewed as the source of the accident. The truth with reference to this point should be well understood by every practitioner, for unless it be so, an incompetent person may shield himself from merited blame by casting censure upon a consulting physician by whose efforts the lives of both mother and child have been saved, or a skilful operator may suffer unjustly in a suit for malpractice.

In a report upon this subject by Mr. I. Baker Brown¹ to the Obstetrical Society of London, in 1863, the following statements are made: "With regard to the causes of vesico-vaginal fistula, of the 58 cases admitted into the London Surgical Home, 47 were over 24 hours in labor, and 39 were as much as 36 hours or more; 7 were two days; 16 were three days; 3 were four days; 2 were five days; 2 six days; and 1 seven days.

"In the whole number of cases instruments were used in 29, exactly one-half, and in 4 only of these was the labor less than twenty-four hours, and with seven exceptions the patient had been thirty-six hours or more in labor before instruments were used.

"Of the 58 cases, in 24 only the injury happened at the first labor; in 7 at the second; in 5 at the third; in 4 at the fourth; in 6 at the fifth; in 2 at the sixth; in 5 at the eighth; in 1 at the ninth; 1 at the thirteenth; 1 at the fifteenth; and 2 not mentioned."

"From the foregoing statistics it is evident that the cause of the lesion is protracted labor, and not the use of the instruments or deformity of the pelvis."

"As a necessary deduction from what has been stated, it follows that vesico-vaginal fistula would scarcely if ever occur, if a labor were not allowed to become protracted; and this is a point for the careful consideration of practitioners in midwifery." The experience of Dr. Sims² is confirmatory of that of Mr. Brown. Emmet, whose authority in this

¹ Obstet. Trans., vol. v. p. 23.

² Gardner's Notes to Scanzoni, p. 503.

matter is very high, gives the causes of 179 cases,¹ and 171 of the number originated in childbirth.

It may be said in a general way then that the cause of urinary fistulæ in the female is parturition, a few exceptions to the rule occurring; that protracted labor is very generally productive of them; and that the prompt use of instruments is, as a rule, preventive of them.

It is a curious fact that, when for the relief of chronic cystitis a vesico-vaginal fistula is intentionally created by the knife, it is difficult to keep it open. In spite of the occasional introduction of the sound for this purpose, such openings obstinately heal of their own accord, so that it becomes necessary to place a species of button or stud in the opening to prevent an issue which, under these circumstances, is undesirable. This case seems parallel with that of perforation of the tympanum, which, being effected by an instrument, heals rapidly; while the closure of an opening, the result of disease, is usually impossible.

About thirty years ago Dieffenbach² recorded a case of vesico-vaginal fistula, the cause of which had been the presence of a stone in the bladder, complicating labor; and Baker Brown³ mentions another instance of this kind in 1861.

Ulceration or Abscess.—The vaginal walls may be eaten through by cancerous, syphilitic, or phagedenic ulcers, or a communication may be established by an abscess opening into the vagina and into a neighboring viscus or part. In one case I found, in the autopsy of a woman who had died from a profuse diarrhœa, in which the feces had passed by the vagina, a communication created by abscess between the caput coli and that canal.

Cancerous disease often destroys the vesico-vaginal septum, but as these fistulæ are irremediable, and attend upon a rapidly fatal disorder, they attract little attention in themselves. Lastly, certain diseases producing deficiency of nutrition, as, for example, the continued fevers, may cause sloughing of the vaginal walls or phagedenic ulceration.

SYMPTOMS.—The prominent symptoms and signs of urinary fistulæ may be grouped under three heads: first, those furnished by a characteristic discharge; second, those arising from the irritant action of such discharge upon the part over which it flows; and, third, those afforded by physical examination.

Sometimes the escape of urine is so excessive as to preclude the necessity of a discharge *per vias naturales*; at others the excretion is partly

¹ Principles and Practice of *Gynecology. The author gives in his tables 202 cases, but I subtract 23 which were intentionally produced for removal of stone and cure of cystitis. Evidently these are not admissible in the study of Etiology.

² Med. Record, vol. i. 321.

³ Op. cit.

evacuated by the natural and partly by the vicarious outlet. This symptom shows at times eccentric variations. When the fistula is seated in the urethra, the bladder may be distended without loss, which may take place into the vagina during micturition. Sometimes while in the horizontal posture the escape will cease, the anterior vesical wall being pressed by the intestines against the *bas-fond* so as to close the opening; and in other cases, where the fistula is above the orifice of the ureters, the flow will take place while the patient lies, and cease when she stands.

The passage of excrementitious material through a canal and over a tissue not intended by nature to tolerate it, produces inflammatory action, pruritus, eruptions, and excessive irritability. In urinary fistulæ the vulva and thighs are usually red, excoriated, and covered by a vesicular eruption. The vagina is sometimes covered by urinary concretions, and a highly offensive odor emanates from the patient's body.

The general health is very likely in time to give way, and hysteria, chlorosis, and graver disorders often show themselves.

PHYSICAL SIGNS.—If the fistulous orifice be a large one, even a superficial examination by touch, the patient lying upon her back, will generally serve to reveal the nature and extent of the lesion. It is different, however, with very small fistulæ, which will sometimes elude the most careful investigation. For their detection Sims's speculum should be employed, and in many cases it will be found advisable to place the woman in the knee-elbow position, instead of that on the side, before its introduction, and to have the buttocks and labia pulled apart by the hands of assistants. Even this method is not effectual in revealing the opening if it be very minute. Under these circumstances the bladder should be injected with water, and its escape into the vagina carefully watched for. Sometimes, by this means, a capillary opening, just at the junction of the vagina and cervix, will be detected. Kiwisch, Meyer, Veit, and others have used for this purpose water colored with substances which will impart a bright tinge to it. Infusion of cochineal, madder, or indigo may be thus employed. The opening being once detected, the probe and finger will readily reveal the course, extent, and terminus of the tract.

COMPLICATIONS.—The complications which these fistulæ develop are vaginitis, vulvitis, stricture of urethra and vagina, and sometimes endometritis and periuterine inflammation. The most constant and important of these is the formation of bands, which contract the vagina, and which often require severance before operative procedure can be practised.

PROGNOSIS.—Previous to the year 1852, the prognosis of all cases in which the orifice acted as a vicarious outlet, for example, vesico-vaginal, recto-vaginal, and vesico-utero-vaginal fistulæ, was eminently unfavorable,

for they very rarely undergo spontaneous recovery, and the means of cure at our command up to that time were uncertain and full of discouragement. In 1860, Dr. Sims¹ stated, "Of 261 cases of vaginal fistula (vesical and rectal) 216 have been permanently cured by the silver wire suture, 36 are curable, and 9 incurable. Every case is curable when the operation is practicable, provided there is no constitutional vice to interfere with the powers of union. Success is the rule, failure the exception."

The enlarged experience of the profession has fully corroborated these assertions, made twenty years ago, and it may now be accepted as a true statement as to the prognosis of all fistulæ of the female genital organs except cases of vesico-uterine fistula, in which the point of rupture is out of reach of surgical interference.

HISTORY.—The history of this subject dates back only to the sixteenth century, when attention was called to it, and a plan of treatment proposed by Ambrose Paré. Before the discovery of the forceps, the accident must have been one of very frequent occurrence, for then powerless labor was not under the control of the obstetrician, except by resort to a set of badly constructed instruments for craniotomy, which in themselves presented serious dangers of laceration. The symptoms which mark its existence are so palpable and distressing that it does not require a physician to diagnosticate it, and no case of any gravity could have escaped notice. And yet, curious to relate, there are few diseases to which woman is liable, which have received so little notice at the hands of the ancients. Even pelvic cellulitis and other affections, which have but lately attracted attention from the physicians of our day, are distinctly alluded to by the writers of the Greek school; but this one, so annoying, so destructive of happiness, and so urgent in its demands for relief, has received scarcely any mention. It is true that Hippocrates makes some slight allusion to involuntary discharge of urine following difficult labors, but his remarks upon the condition are meagre and unimportant.

I do not claim to have made a full examination of the writings of the Greeks and Romans with reference to the subject, but base the statement which I have advanced chiefly upon the fact that the two great compilers of their periods, Aëtius and Paulus Ægineta, make no mention of it. The work of Aëtius upon diseases of women (*Tetrabiblos* IV.) is made up of quotations from Soranus, Aspasia, Galen, Philumenus, Archigenes, Leonidas, Rufus, Philagrius, Asclepiades, in fact of all worthy of note, whose writings were stored in the Alexandrian Library, which was the seat of his labors. By none of these is mention made of the affection. The works of Paul of Ægina, enriched as they have been by the copious notes of Dr. Adams, their translator, are equally silent; and the researches of

¹ Gardner's Notes to Scanzoni, p. 515.

those who have examined the writings of the Arabians record no discovery of any description of it at their hands. At any rate, it is quite certain that no contributions to the treatment of the difficulty were made by the writers of the Greek, Roman, or Arabian schools.

Beginning at the seventeenth century, I will allude only to those who have made some advance in treatment, and not endeavor to record the names of all who have reported cures, or advised procedures which have not been of subsequent utility.

Before proceeding with the historical sketch which ensues, I would draw the attention of the reader to two interesting facts which it will demonstrate. It will be seen that for centuries steady, persevering, and systematic efforts have been made to render this revolting malady curable, and that, as has often been the case in other great discoveries, the minds of several investigators pursued the same course until at last success was reached. After a discovery has been made it is always easy to point out the elements upon which it rests for its success, and even to follow the process of reasoning by which each in turn was supplied. There can be no doubt that the three elements necessary for successful treatment of the lesion which we are considering, were—

- 1st. A means for exposing the fistula to view and manipulation ;
- 2d. A suture which would remain in place without causing inflammation ;
- 3d. A means of disposing of the urine during the process of cure.

From the time that Paré suggested a plan of treatment, it will be noticed that surgeons brought these three means of cure to their aid. But they employed them separately, some using one of them, some another, and others still combining two. It was not, however, till the time of Gosset, in 1834, that the three were combined by the same operator.

In 1570, Ambrose Paré proposed the closure of vesico-vaginal fistulæ by a retinaculum. In 1660, Roonhuysen, of Amsterdam, used a speculum, through which he pared the edges of fistulæ and united them by a needle. In 1720, Væltér, of Wurtemberg, advised a needle, needle-holder, suture by silk or hemp, and a catheter. In 1792, Fatio, of Basle, operated by twisted suture, placing his patients in the lithotomy position. In 1804, Dessault used a vaginal plug and catheter in the bladder. In 1812, Naegelé, of Wurtemberg, scarified the edges by scissors, used needles to approximate them, and employed the interrupted suture. In 1817, Schreger, of Germany, placed the patient on the abdomen, scarified the edges, and used interrupted suture. In 1825, Lallemand, of France, applied nitrate of silver to the edges of the fistula, and approximated them by a "sonde érigne" passed through the bladder, and, of fifteen cases, cured four. In 1829, Roux, of France, tried twisted suture with metallic bars and ordinary thread. In 1834, Gosset, of London, combined the knee-elbow position, levator perinei speculum, metallic sutures, and catheter

permanently kept in the bladder. In 1836, Beaumont¹ employed the quilled or clamp suture. In 1837, Jobert de Lamballe resorted to autoplasty, transplanting a piece from the labia, buttocks, or thighs. In 1838, Wutzer, of Bonn, placed his patients on the abdomen, pared the edges of the fistula, and approximated them by insect needles and figure-of-8 suture. To expose the fistula the perineum was held up by a hook and the labia drawn aside by assistants. In 1839 and 1840, Hayward, of Boston, U. S., reported three cases cured by vivifying the edges and closing with silk suture. This surgeon introduced a notable improvement, and aided in the final success by vivifying not only the borders of the fistula but the neighboring vaginal surfaces. In 1844, Chelius² placed his patients in the knee-elbow position. In 1846, Metzler,³ of Prague, employed the levator perinei speculum, perforated balls the size of shot, the knee-elbow position, gilded needles, and a permanent catheter. In 1847, Mettauer, of Virginia, employed the catheter and leaden sutures with such success that he was led to make the following statement: "I am decidedly of the opinion that every case of vesico-vaginal fistula can be cured, and my success justifies the opinion." In 1852, Jobert de Lamballe adopted his method, styled "*réunion autoplastique par glissement*," which consisted in giving sufficient vaginal tissue for union, by cutting transversely through the vagina, at its junction with the uterus, in a line with the fistula. In 1852, Marion Sims,⁴ of the United States, combined the three essentials for success; the speculum, the suture, and the catheter, and placed the operation at the disposal of the profession.

The discoveries to which he laid special claim were these:—

- 1st. A method by which the vagina could be distended and explored;
- 2d. A suture not liable to excite inflammation or ulceration;
- 3d. A method of keeping the bladder empty during the process of cure.

Entering the field almost as early as Sims, Simon, of Germany, greatly aided in systematizing the operation, and has been second to no one else in improving it.

From a study of the literature of this subject it is made as evident as written testimony can make any history of the past, that not only did several investigators combine two of these elements of success in their operations, but that two, Gosset, in England, and twelve years afterwards Metzler, in Germany, absolutely combined all three. It is also made equally evident that they either failed to recognize the importance of what they had attained, or did not impress its value upon others so that humanity could profit by it. Dr. Gosset's procedure is thus described in his own words in the first volume of the London Lancet, page 346.

"Having placed the patient resting upon her knees and elbows, upon

¹ Med. Gaz., Dec. 3d, 1836, p. 355.

² Agnew, op. cit., p. 15.

³ Schuppert on Ves.-Vag. Fistula, p. 41.

⁴ Amer. Journ. Med. Sci., 1852.

a firm table of convenient height covered with a folded blanket, the external parts were separated as much as possible by a couple of assistants, so as to bring the fistula, which was immediately above the neck of the bladder, into view. I seized with a hook the upper part of the thickened edge of the bladder which surrounded the opening, and proceeded with a spear-shaped knife to remove an elliptical portion, which included the whole of the callous lip surrounding the fistula, the long angle of the ellipsis being transversely. This was readily effected; but, in consequence of the very contracted state of the parts, the next steps of the operation were with difficulty executed; and I should not have succeeded in passing the sutures, had I not used needles very much curved, and a needle-holder which I could disengage at pleasure, the needles being withdrawn with a pair of dissecting forceps after the holder was removed. In this way three sutures were passed; and afterwards, by twisting the wire, the incised edges were brought into contact and retained in complete apposition until they had firmly united. One of the sutures was removed at the end of the ninth day, the second at the end of the twelfth day, and the third was allowed to remain until three weeks had elapsed. After the operation the patient was put to bed and desired to lie on her face, an elastic gum catheter, having a bladder secured to its extremity for the reception of the urine, having been introduced and retained by means of tapes. She had not the slightest discharge of urine through the vagina after the operation, which completely succeeded in restoring the healthy functions of the part. The advantages of the gilt wire suture are these: it excites but little irritation, and does not appear to induce ulceration with the same rapidity as silk or any other material with which I am acquainted; indeed, it produces scarcely any such effect, except when the parts brought together are much stretched. You can, therefore, keep the edges of a wound in close contact for an indefinite length of time, by which the chances of union are greatly increased. I have used it now in very many operations, as after extirpation of the breasts, tumors of various kinds, and for bringing the lips together after the removal of a cancerous growth, in all of which cases it answered extremely well."

The method of Metzler was published in the *Prague Viertel Jahresschrift* for 1846, under the title of "Pathology and Treatment of Urinary and Vesico-Vaginal Fistulas, with a method of treatment easily executed and completely successful." I transcribe his article from the brochure of Dr. Schuppert already alluded to.

"To perform the operation successfully, it is of much importance to have—1st, a speculum, serving as a dilator of the vagina. Such an instrument consists of a grooved conical blade, five and a half inches long, three inches wide at the anterior part, one-half an inch wide at the posterior. The end of the speculum is bent under at a right angle, and protected with wood for the handle. The instrument is best when made

of silver, and polished to reflect the light on the parts to be operated upon. 2d, an apparatus consisting of perforated clamps, gilded needles, and an instrument called 'Rosenkranzwerkzeug,' consisting of perforated balls of the size of large shot, by which the clamps are held in contact. After the patient is placed on her knees and elbows, the dilator is introduced into the vagina and given to an assistant, who in holding it presses it against the rectum. The edges of the fistula are then pared off, which may be accomplished with curved scissors. One line and a half from the mucous membrane of the vagina and half a line from the edge of the bladder have to be cut off; the needles are then applied, and the wound held in coaptation by the clamps; a female catheter is introduced into the bladder by the urethra, and the catheter fastened by a T bandage."

From what has been said thus far it would appear that Dr. Sims was forestalled in all the details of the discovery by which he has rendered vaginal fistulæ curable. To a certain extent this is unquestionably true, but only as regards the theory of the matter. Before his publications the unfortunate women, whose lives were rendered miserable by fistulæ through the vaginal wall, were virtually almost as hopelessly affected as they were before Gosset and Metzler appeared in the field.

Velpéau,¹ in 1839, thus speaks of cure of these fistulæ: "To abrade the borders of an opening, when we do not know where to grasp them; to shut it up by means of needles or thread, when we have no point apparently to secure them; to act upon a movable partition placed between two cavities, hidden from our sight, and upon which we can scarcely find any purchase, seems to be calculated to have no other result than to cause unnecessary suffering to the patient." Vidal de Cassis² says: "I do not believe that there exists in the science of surgery a well-authenticated, complete cure of vesico-vaginal fistula." Malgaigne,³ in 1854, says: "But the truly rational method, that which at present offers the greatest facility and efficacy, and the only one which should be applied in all cases of fistula of large size, is the suture by the procedure of Jobert."

Wutzer reported the following as the statistics which he had collected:⁴ "20 cases of vesico-vaginal fistula were subjected to 48 operations—among which were elytroplastie, episioraphie, cauterization, sutures, interrupted or twisted, and both—and only two cured!"

This was the real state of science with reference to this *opprobrium chirurgiæ* when Marion Sims, by combining and utilizing the three essentials for success, gained it, and rendered the operation practicable for all surgeons. It must not be supposed that he availed himself of the results obtained by his predecessors. All that he attained was arrived at by hard and original labor. Indeed, no one can read his address upon "Silver

¹ Operative Surgery.

³ Manuel de Méd. Opérat.

² Pathologie Externe.

⁴ Med. Record, vol. i. p. 322.

Sutures in Surgery," delivered before the New York Academy of Medicine, in 1857, without being struck by his want of familiarity with the antecedent literature of the subject of his discourse.

I would not be understood as claiming for America in this matter more than she really deserves—the establishment of the method of cure upon a firm and certain basis. To claim more than this would be to ignore the plain teaching of history. To France belongs the inception; to England the glory of having absolutely made the discovery, although she did not appreciate the fact; to Germany, next to America, the credit of having specially advanced and perfected reliable operative procedures. In that country to-day, by the method of Simon, success even in the gravest cases has become the rule and failure the rare exception.

Since the first publication of Sims's method, numerous modifications of it have been put into practice both in this country and Europe, and Dr. Sims himself has altered his plan of operating very much. The principle which he demonstrated is, however, the same, and the modifications of the operation all act in developing it.

In this country, the operation is commonly performed, not by specialists alone, but by practitioners in every walk of the profession, and, thanks to the extreme simplicity of Sims's procedure, it is no longer looked upon as a difficult undertaking, requiring special skill and experience. It is at the present day certainly very difficult to appreciate the statement of a physician¹ of Ireland, that "he unfortunately had the opportunity of seeing a great number of fistulas, and a great number of operations, and his experience had been that the vast majority of them proved unsuccessful."

Means for Obtaining a Natural Cure.—Within a few days after delivery the obstetrician is generally made aware of the existence of vesicovaginal fistula by a steady and involuntary dripping of urine. As soon as this is evident a Sims's stationary catheter should be placed in the bladder, the vagina frequently syringed out with warm water to lessen inflammatory action, and the patient kept in the abdominal decubitus, in order that a repair of the injury may be accomplished by the efforts of nature. This is all that can be done at this time, for it is too early to resort to suture, and the lochial discharge would be interfered with by a tampon intended to aid in the cure. The operation by suture should not be undertaken before the immediate results of parturition have passed off and the fistula has assumed a permanent size and character.

¹ Remarks by Dr. Cronyn before the Surgical Society of Ireland, March 15, 1872.

Treatment.

The methods at our command for curing, or, where cure is impossible, obviating the inconveniences due to fistulæ of the female urinary apparatus, are—

- 1st. Cauterization ;
- 2d. Suture ;
- 3d. Elytroplasty ;
- 4th. Occlusion of the vagina or uterus.

Cauterization.

This once favorite method of treating all varieties of these fistulæ has now very deservedly fallen into disuse, under the influence of improved methods by suture. Malgaigne probably gives this means its proper place when he declares that it should be employed only in those cases where the fistula is scarcely perceptible. Even in such cases Sims's operation is far preferable, and cauterization should be employed only where some special circumstance, such as want of skill or of the proper instruments, forces the operator to resort to it. The performance of it is very simple. Sims's speculum being passed so as to expose the fistulous spot, its borders should be thoroughly touched with a pointed stick of nitrate of silver or the actual cautery. This should not be repeated before the slough created has separated, and an opportunity been allowed for granulation to fill up the opening.

To check the flow of urine through the fistulous orifice and support the vaginal and vesical walls during the process of granulation, a small tampon of cotton, a Gariel's air pessary, or a glass vaginal plug should be kept in the vagina, and, to prevent distention of the bladder, a sigmoid catheter should be permanently retained.

Suture.

Preparation of the Patient.—No operation in surgery more urgently demands a good constitutional condition, as an element of success, than this. Should the patient's health not be good, and her blood-state be abnormal, a visit to the country, exercise, and fresh air, with vegetable and mineral tonics, will do a great deal towards avoidance of failure. At the same time the vagina should be regularly syringed with warm water to overcome local inflammation, and insure cleanliness. Should the disorder which caused the destruction of the vaginal wall have produced as a complication cicatricial bands in the canal, these should be cut, from time to time, and allowed to heal over a glass vaginal plug, and if contraction have taken place in the urethra, it should be overcome by bougies. Before the time of the operation the bowels should be thoroughly evacuated by a cathartic, and on the day of its performance very little

food should be taken, for fear that the long-continued use of an anæsthetic might produce vomiting, which would tear out the sutures.

Sims's Operation.—This operation may be divided into three parts:—

1st. Paring the edges of the fistula;

2d. Passing sutures through them;

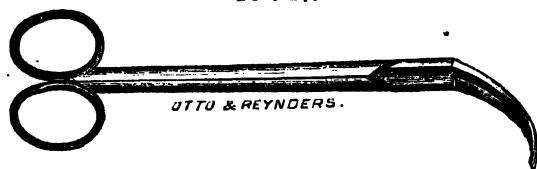
3d. Approximating them and securing the sutures.

The patient, being placed upon a table two and a half by four feet, which is covered by folded blankets, is brought under the influence of an anæsthetic, and placed in the following position. She is made to lie on the left side, with the thighs bent at about right angles with the pelvis, the right a little more flexed than the left. The left arm is placed behind her back, and the chest brought flat down upon the table so that the sternum may touch it. The assistant who is to hold the speculum, which is then introduced, does so with the right hand, while with the left he elevates the right side of the nates. The table should be so arranged that a bright and steady light may fall into the vagina, which being then fully distended, will be seen throughout its extent, except where it is obscured by the speculum.

The operator, having near him all the instruments, etc., which he will require, places his assistants thus: one holds the speculum, another administers the anæsthetic, and a third stands ready at his right hand to remove the blood accumulating in the vagina, by means of sponges, in the sponge-holders, Fig. 91, which are rapidly washed in a basin of water that stands by his side, to be used again. A fourth assistant, if attainable, may be well employed in handing the instruments as they are required. All being ready, he proceeds with the first step of the operation.

Paring of the Edges of the Fistula.—The edge of the fistula, at the point which is deemed most difficult of access and manipulation, is caught by the tenaculum, or with what I much prefer, the tooth forceps, shown

FIG. 87.



Curved scissors.

FIG. 88.



Bistoury for paring edges of fistula.

in Fig. 59, and held up. Then with a pair of long-handled scissors, Fig. 87, or a knife, Fig. 88, a strip is cut, extending from the mucous mem-

brane of the bladder to that of the vagina, care being taken not to wound the former.

FIG. 89.

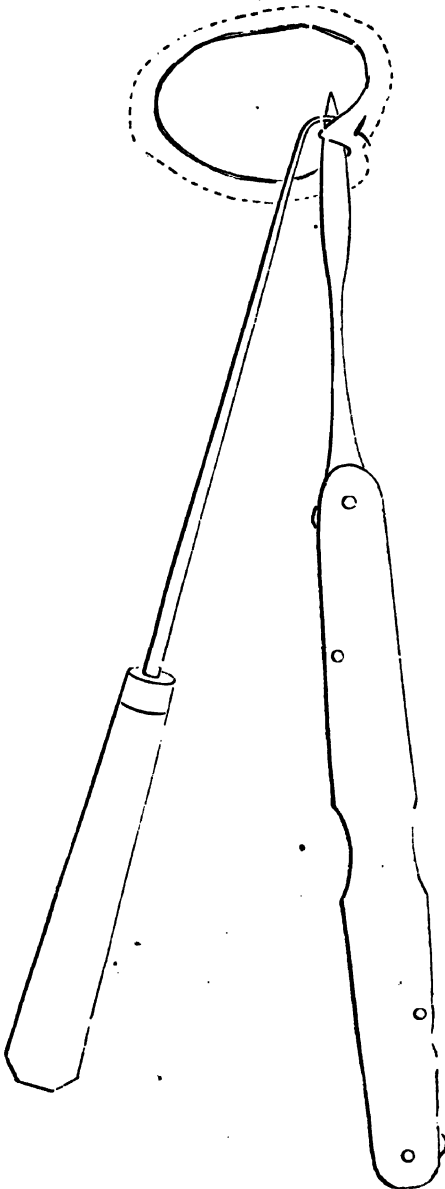
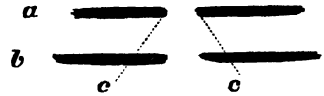
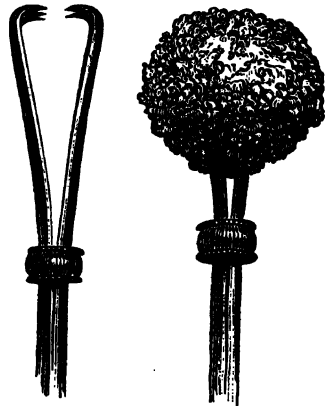


FIG. 90.



Showing beveling of edges. *a*, vesical border; *b*, vaginal border; *c c*, incision.

FIG. 91.



Sims's sponge-holder with handle nine inches long.

Paring the edges. (Wieland and Dubrisay.)

Another portion of the edge is then seized, and removed like the first. The wound thus left should be one bevelled from the vesical surface out-

wards, and great care should be observed to remove the entire border, for upon this success depends.

It is of great moment that sufficient tissue should be removed, and that the amount taken on the vaginal surface should be greater than that near the vesical. Prof. Simpson¹ makes this point very clear by the following language: "Enter the point of your knife into the vaginal mucous membrane at some distance from the fistula; then transfix with your knife the edge of the fistula to the extent you intend to remove it, and bringing it out at the vesical border, carry it right and left fairly round the opening, so as, if possible, to bring out a complete circle of tissue."

The abraded surface, from the edge of the fistula to the point of vaginal section, should measure at least four lines, one-third of an inch, while above, it should just touch the vesical border, not invading its mucous membrane. This is made evident by Fig. 90. During this part of the operation the sponges, held in long-handled sponge-holders, will have to be freely resorted to, but the bleeding generally soon ceases, and the operator may proceed to the second step.

Passing the Sutures.—The sutures are passed by means of slightly curved needles held in a pair of strong forceps, Fig. 92, made for the purpose. In some cases the metallic thread, made of annealed silver, which is employed, may be passed at once, but usually silk threads are first passed, and the silver sutures are attached and drawn through. Dr. E. Cutter recommends a very ingenious method for avoiding the necessity of threading the needle, and thus having a piece of silver wire folded over so as to interfere with its passage through the tissues. He welds the wire firmly to the needle so that no obstruction exists at the point of union. A number thus prepared are in readiness for each operation.

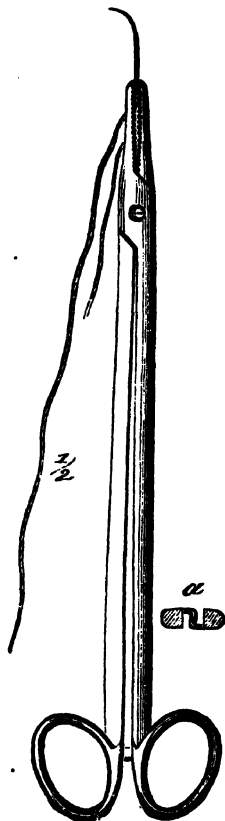
The needles which we employ in the Woman's Hospital are about three-quarters of an inch long, round, slightly curved, and without cutting edges anywhere. Dr. John T. Hodgen, of St. Louis, has invented a needle which serves an excellent purpose. It is a very small, straight, short needle, with a point like that of a trocar. This passes readily through the tissues, and to it is attached a delicate silk thread which carries the silver wire, the bent end of which is rubbed down very small by sand-paper. The needle, held in the grasp of the needle-holder, should be passed at the angle of the wound which is most difficult of access, half an inch from the edge of the incision, and brought out at the vesical surface, but not involving its mucous lining. Fig. 93 represents the point of entrance and exit of the needle.

The point of the needle having passed out, it is engaged by the small, blunt hook Fig. 98, until it can be seized and drawn through by the

¹ Diseases of Women.

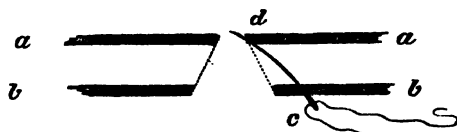
needle forceps. Then it is plunged into the other lip and drawn out half an inch from the edge of the incision. The ends of the silk suture are

FIG. 92.



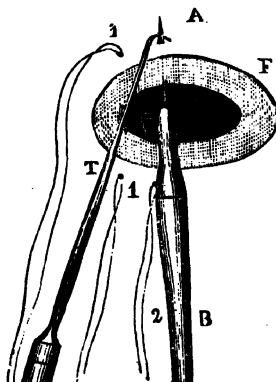
Needles held in forceps.

FIG. 93.



Course of the needle. *a*, vesical border; *b*, vaginal border; *c*, point of entrance of needle; *d*, point of exit of needle.

FIG. 94.



Passing the needle. (Wieland and Dubrisay.)

then given into the charge of the assistant holding the speculum, and another is passed in the same way at the distance of one-sixth of an inch from the first. In this way a sufficient number are passed to close the fistula, Fig. 95.

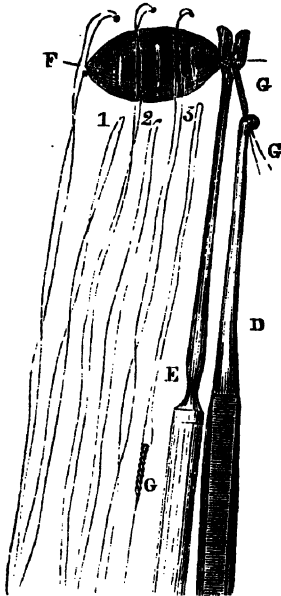
During this procedure the edge of the fistula is to be fixed by the tenaculum, and should firm, opposing force be needed to make the needles pass, it may be given by that instrument.

When the needle is seized by the forceps and pulled so as to make the thread follow it, some opposing force is needed, or the thread might cut through the tissues. This force is offered in the species of fork represented in Fig. 97, which is put as a fulcrum under the thread at its point of exit, and made to sustain and draw it through.

A bit of silver wire about twelve inches long is attached, by bending

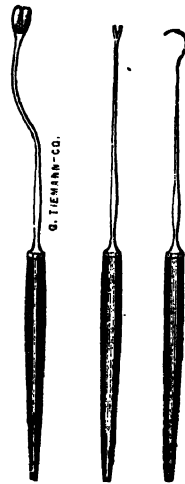
its extremity, to the first silk suture, and by the use of the fork just mentioned, the silk thread is drawn through so as to make the wire replace it.

FIG. 95.



Twisting the sutures.

FIGS. 96, 97, 98.



Fulcrum for supporting wire while it is twisted.
Fork with blunt points to aid the passage of sutures.
Hook for engaging needle.

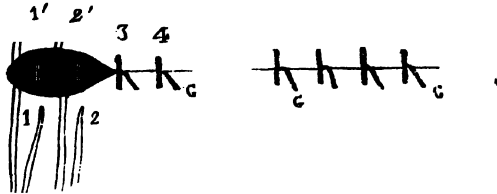
The silk is then cut off, the silver suture put aside, and the operator proceeds to replace each silk thread in the same way. This being accomplished, the instruments are then changed in order to effect the twisting of the sutures.

The ends of the silver sutures being drawn together by the fingers, and the edges of the wound carefully approximated, each thread is slightly twisted so as to keep the whole in apposition. Then the ends of the first suture are seized in the bite of the forceps, Fig. 95, slipped into the fulcrum, Fig. 96, and torsion is made so as to close the wound completely at this point. In this way the sutures are twisted one after the other, care being taken not to carry the torsion so far as to strangle the tissues engaged in the constricting loop. Each suture is then clipped by a pair of scissors, about half an inch from the edge of the fistula, and by means of forceps pressed flat against the vaginal wall so as not to wound the opposite surface.

The bladder should then be syringed out to remove all blood which may have accumulated there; for, if a large clot should be retained in this viscus, it may cause severe vesical tenesmus, and smaller ones may block up the mouth of the catheter, which is to be kept in place permanently, and call for its repeated removal.

The patient is then placed in bed by the assistants, an opiate is administered, and a Sims's sigmoid catheter is passed into the bladder and left

FIG. 99.



Sutures twisted. (Wieland and Dubrisay.)

there. The mouth of this instrument projects beyond the vulva, so that under it a small china dish may be placed, which will receive the urine as it passes through.

FIG. 100.



Sims's catheter, old style.

FIG. 101.



Sims's catheter, new style.

Dr. Sims' has recently modified his catheter as represented in Fig. 101. To this a rubber tube is attached which acts as a siphon.

The nurse should examine the catheter every two or three hours to be certain of its perviousness, and to remove the urine which collects in the receptacle placed under it.

Once in every twenty-four hours the vagina should be syringed out with tepid water, or with this and white castile soap, or any similar detergent; but the bladder requires no further washing than that mentioned, except in cases of vesical tenesmus. The bowels should be kept constipated by opium. The diet should be governed by the same rules which guide us in the management of patients under other surgical operations. It should be nutritious and unstimulating.

In from eight to fourteen days the sutures should be removed. Dr. Sims declares that, "it is unnecessary to allow the wires to remain longer than the eighth day;" but others, calculating upon the innocuousness of metallic substances in the tissues, have left them longer. In two of Dr. Schuppert's cases a leaking was detected when the bladder was injected on the sixth and seventh days, which had disappeared entirely on the twelfth, when the sutures were removed and the cure was found complete.

To accomplish the removal of the sutures, the twisted end of one of them should be seized by a pair of forceps and drawn upon gently until

the edge of the loop emerges from the tissues in which it has been embedded. Then the blade of a pair of scissors should be inserted into the loop and one side cut, after which a little traction will remove the suture.

An examination may then, with great caution, be instituted to ascertain whether success or failure has attended the operation. A visual examination will generally determine this. Should there be any doubt, the bladder may be filled very cautiously with tepid water to settle the question as to the entire closure of the fistula. Sometimes one operation fails to cure, although it diminishes the size of the fistula very much, and subsequent operations must be resorted to. It may be necessary to repeat these very frequently before success is attained.

The operation of Dr. Sims has been variously altered in all its steps, so that now the number of modifications is quite great, so great, indeed, that it would be out of the province of a work like this to mention them in detail. In his earlier operations Dr. Sims employed the quill suture, which he called the clamp suture, but a tendency on the part of the little metallic bars, which he used in place of quills, to produce ulceration, induced him to resort to the interrupted suture.

Other methods have been successfully employed by Bozeman, Agnew, Baker Brown, Simpson, Simon, and others. For fear of being uselessly prolix, I shall describe but one of these, that of Simon.

Among other attempted improvements, Dr. Startin and M. Matthieu, of Paris, have invented hollow needles, through which the silver threads can be passed without first passing those of silk. Extended experience with tubular needles leads me to the conviction that they are at once the most ingenious and worthless appliances which can be employed.

Simon's Operation.—No one, with the exception of Marion Sims, has labored more earnestly, or achieved more for this operation than Prof. Gustav Simon, of Heidelberg. Succeeding Dieffenbach, Wutzer, and Metzler, who had themselves accomplished a great deal in advancing the interests of the operation by suture, he steadily labored with the means at his command, and, even before he became acquainted with the improvements made by Sims, had acquired a great degree of skill in treating vesico-vaginal fistulæ. To regard him as an imitator would be unjust. He was without question a coincident discoverer.

The chief features of Simon's operation are these:—

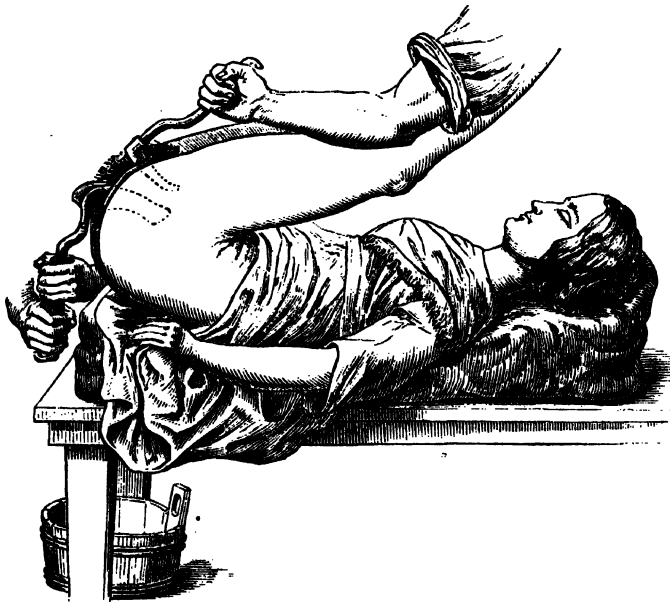
- 1st. He repudiates silver wire as a suture superior to fine silk.
- 2d. He employs an exaggerated lithotomy position in place of the left lateral position.
- 3d. Instead of avoiding the mucous membrane of the bladder, he intentionally involves it in his abrasion.
- 4th. He uses no stationary catheter, and has the urine drawn only during the first twenty-four hours, and this not always.
- 5th. He allows the bowels to be evacuated whenever nature prompts it,

and does not diet the patient nor confine her to bed. At times he even permits outdoor exercise in twenty-four hours after the operation in favorable cases.

I prefer to describe his procedure as far as possible in his own words. The following *resumé* of his method is made up from his work upon "The Operation for Vesico-vaginal Fistula," published in 1862.

"*Position of Patient.*—There are three positions, in general use, for the patient in operation for vesico-vaginal fistula: (1) The back, as in operation for stone; (2) the knee-elbow; and (3) Sims's position, which is a modification of the latter. "I use neither of these, but prefer the breech-back position (*Steiss-Rückenlage*), which has all the advantages of those mentioned, without their disadvantages. It consists in this, that the patient, lying on her back, is put in a position which is almost exactly similar to the knee-elbow position. The breech is so elevated that it is somewhat above the level of the abdomen and breast. The thighs are

FIG. 102.



Simon's position for vesico-vaginal fistula. (Simon.)

bent back towards the belly and the sides of the chest, so that the breech is the most projecting part. The legs are either flexed at the knee, or extended over the sides of the chest. The vulva is above and to the front. The head is supported by a pillow. If the fistula is seated very high in the vagina, the thigh must be drawn as far as possible upwards; if the fistula is, however, very near the vaginal outlet, we are not obliged to elevate the breech so much, and have no need, therefore, of flexing the

thigh so forcibly. I have called this, in distinction to the ordinary back position, the "Steiss-rückenlage;" because in it the breech (Steiss) is the most projecting part, and presents itself in a manner very similar to the breech presentation of the fœtus.

The advantages are :—

1st. The field of operation is clear, we are not obliged to operate between the thighs.

2d. The assistance can all be given from the side, without hindering the operator.

3d. It allows the use of several specula and the side retractors, to expand the vagina on every side.

4th. It is quite as well borne as the ordinary back position.

5th. It admits of chloroform narcosis.

If the fistula can be brought down entirely with perfect ease, I bring it directly to light. If, however, there is the least difficulty in moving it, (as in the majority of cases), I operate with the specula and retractors, with the fistula *in situ*. I always prove this by seizing the uterus with a hooked-forceps (Museux) and pulling it gently down, before I operate with the specula and levers. I have improved Jobert's method of seizing the cervix with the forceps by passing two threads through the cervix, thus getting rid of an instrument which is very much in the way. Sims constructed a gutter-shaped speculum for expanding the fistula, which has left all other specula in the background. He used four sizes. It is shaped like Neugebauer's (1856), except that instead of ending in a sharp edge, it is rounded out at the end. I have found the use of this speculum in many difficult cases absolutely insufficient, and, in the majority of cases, it only answers the purpose by the aid of other instruments to expand the vagina. I use, therefore, not this speculum alone, but also a flat-shaped speculum to hold up the other vaginal wall and also side levers (shaped like retractors), to hold back the labia and sides of the vagina. All these instruments are fixed in long handles, curved at the end, in order to get them out of the way, and to give the assistant a firm grasp.

Always use the widest specula possible, Sims's are not wide enough. I have had two sizes more made.

In addition to these I often use long-handled hooks to seize the edges of the fistula. I always cut the cord-like contractions of the vagina, and have even cut the vaginal folds which were in the way.

Vivifying the Edges.

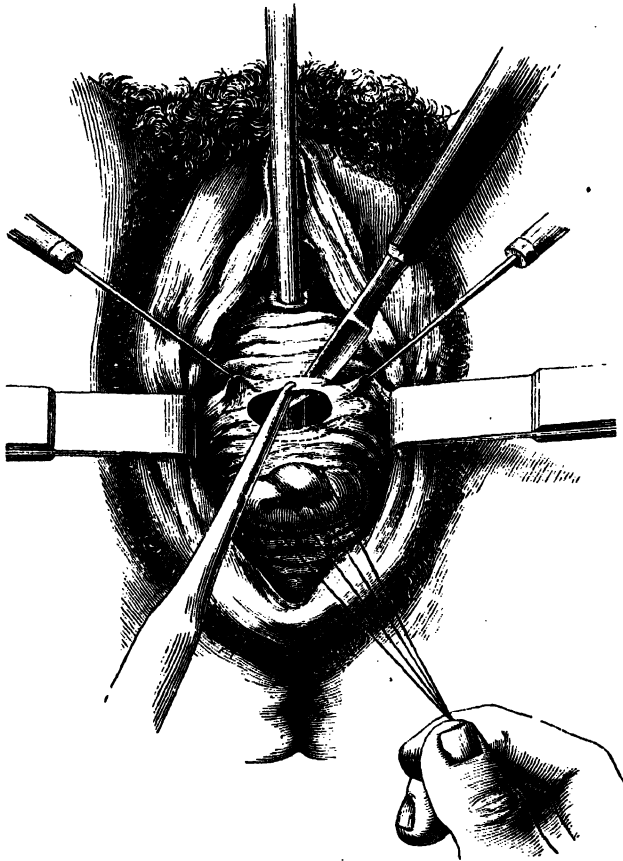
All operators have tried to give a large surface for union without enlarging the wound. They have done this by cutting at the expense of the vagina, leaving the edges of the bladder intact. According to my observations and experience, I give the preference to a deep, funnel-shaped incision of the edges of the fistula similar to the incision in plastic opera-

tions in any other part of the body. The incision must be carried to the healthy tissue and all the cicatricial tissue extirpated.

It extends quite through the walls of the septum to the vesical mucous membrane, and sometimes through it.

In this way is formed a steep, funnel-shaped wound, with its point in the bladder, and its base in the vagina, and its edges from 6 to 8 mm. thick.

FIG. 103.



Vivifying the edges of the fistula. (Simon.)

Although other authors wish to avoid as much as possible the enlarging of this defect, it is exactly here only where union can take place by first intention, that I strive to have the edges as free from cicatricial substance, and as prone to union as possible; and, even in the largest fistula, I do not refrain from this repeated paring off the edges, even to making the

defect very much larger, until the union is accomplished. And, even if with the best preparation of the edges, the union does not take place, and we meet with entire want of success, the woman loses no more urine than before.

Sometimes I cut the vesical mucous membrane, and sometimes avoid it, but place little weight on that.

The advantages claimed are :—

1st. By the deep funnel-shaped incision all cicatricial substance will be certainly cleared away.

2d. The edges are more prone to union, as they unite in a natural manner, edge to edge, and not with a flat surface on the same ; the nerves, vessels, etc., thus continue on in the normal direction.

3d. The very wide edge is unnecessary, as only the upper edges unite in any case.

4th. If union does not take place the first time, a second attempt is more likely to succeed, with the thick edges, than where, with already thin edges, these must be bevelled off still more and made thinner.

5th. The idea that catarrh is more likely to follow this form of incision is unfounded.

Uniting the Edges of the Wound.

Method of Uniting.—There have been a great number of methods of bringing the edges together ; all of which accomplish their purpose, but are more complicated than the method I published in 1854, which, with some modification, I have used ever since.

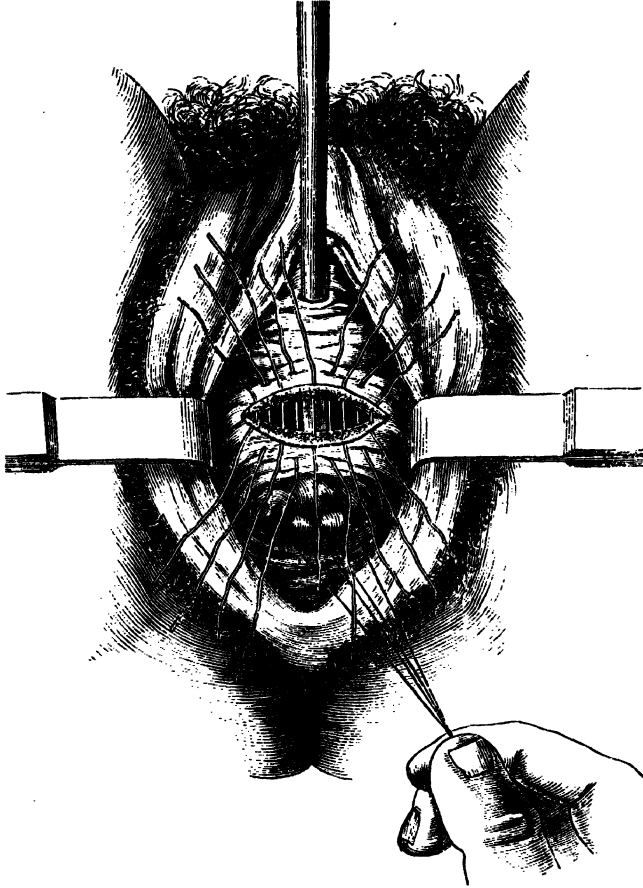
In order to meet the indication for uniting, I use either one or two rows of fine silk sutures tied in the ordinary manner.

In large fistulæ, where a great degree of relaxation is necessary, in order to bring the edges into exact union, I use my so-called double suture, consisting of two rows, one the ‘relaxing,’ the other the ‘uniting.’ In small or in slit-shaped fistulæ, I use only one, the uniting row. In the double suture, one row, placed very deep and wide, approaches the tissues surrounding the fistula, to the line of union, thus relaxing the edges ; while the other, placed between the stitches of the first, holds firmly the edges, and thus promotes the most exact union. When only one is used, it is the uniting row, and placed in the same manner as here described. Of course, each row of sutures supplements the other in its action.

Both rows are placed very deep, even, in many cases, through the vesical mucous membrane. They thus bring the edges of the wound, in their whole thickness, in the closest union, and withstand greater traction than if they only seized a part of the edges. The sutures are $1-1\frac{1}{2}$ lines apart. The point of entrance of the threads is, in the relaxing suture, some dis-

tance from the edge, in the uniting, quite near. I consider it of very little importance, whether the suture goes through the vesical mucous

FIG. 104.



Sutures in position. (Simon.)

membrane or not. It is only necessary to be careful that this membrane does not get between the edges of the wound.

After-Treatment.

1st. From a series of observations, I conclude that neither on the wound nor on the new cicatrix does the urine have any injurious influence, and neither hinders the union by primary intention nor loosens a once formed cicatrix.

2d. From another series of observations, I have learned that the healing is not interfered with by a degree of distention, which could come in

a normal filling of the bladder, provided, only, that the wound is perfectly freshened and united.

In most cases the permanent retention of the catheter only does harm.

Each of these deductions is drawn from a number of appropriate cases.

Upon these conclusions then is based my after-treatment, which up to the removal of the stitches is entirely unimportant. Those minute directions, the carrying out of which is so tedious both for the patient and physician, are all laid aside. The patient is permitted to take any position she chooses. She passes her water, as soon as she feels the need, either in a bed-pan, or, if she object to that, in the sitting or knee-elbow position. Only in a few cases, where the patient is not in a condition to pass water spontaneously, is the catheter used every three or four hours. On the fourth or fifth day an attempt is made to remove the stitches, and this is repeated on the following days. On the eighth day, the patient is allowed to leave her bed, even if all the stitches are not out.

To avoid passages from the bowels, with straining, on the first eight days, a fluid discharge is recommended. If irritation of the bladder ensue, morphine, one-eighth grain per dose, should be given, and daily warm injections into the vagina, but not into the bladder, should be employed."¹

Prof. Simon² reports the following results: "Of 118 fistulæ occurring in 105 patients, there were 104 fistulæ in 92 patients cured completely (a later cure is counted in under the first category); 5 fistulæ in 5 patients almost entirely closed; 2 patients with 3 fistulæ discharged as incurable; 6 patients died."

In the description of Simon's method here given, the words of the author have been employed as much as possible, and now, in concluding my account of it, I proceed to express my opinion as to its value as compared with that of Sims. In a very few rare cases of extensive destruction of the base of the bladder in women who are exceedingly obese, it answers a better purpose than that of Sims; but, as a rule, it is difficult to appreciate how any one who has tried both can consider the former as comparable to the latter. Indeed it may justly be said that Sims's method leaves so little to be desired that all others are completely overshadowed by it.

Elytroplasty.—This operation was published to the profession by Jobert de Lamballe,³ in 1834, and was subsequently altered and improved by Velpeau, Gerdy, and Leroy d'Etiolles. It consists in dissecting a flap from one buttock (Jobert), or the posterior wall of the vagina (Velpéau and Leroy), and fixing it by sutures into the orifice of the fistula, the lor-

¹ This resumé has been prepared from Prof. Simon's work by Dr. M. D. Mann.

² Am. Journ. Obstet., vol. ii. p. 241.

³ Bull. de l'Acad. de Méd. de Paris, t. ii. p. 145.

ders of which have been previously pared. It resembles the operations of rhinoplasty performed upon the face, but is unfortunately even more difficult than they, and calls for such great manual dexterity as to preclude its frequent adoption. Velpeau, by making two parallel, longitudinal incisions in the vagina, dissected up the intervening tissue and stitched it to the edges of the fistula.

Leroy prolonged these incisions to the vulva, dissected up the intervening flap, and, rolling this upon itself, applied its under or bleeding surface against the fistula.

Elytroplasty is still employed sometimes where great destruction of tissue has taken place at the base of the bladder, but the difficulties and uncertainties attending it, together with the fact that more simple and efficient methods for dealing with this class of cases are at command, have rendered a resort to it very rare.

To one unaccustomed to the treatment of fistulæ, it would appear that the larger the fistula the more difficult would be its cure. This is not so; some of the most difficult cases will be found to be those in which the opening is so small as to be discerned with difficulty. In these cases I would strongly recommend the following plan. Introduce into the bladder a large steel sound, and by its extremity make the fistula to project towards the vagina; then cut away the tissue surrounding the fistula so as to let the sound pass freely into the vagina. Sutures may then be passed, and the enlarged fistula cured.

Closure of the Vagina.

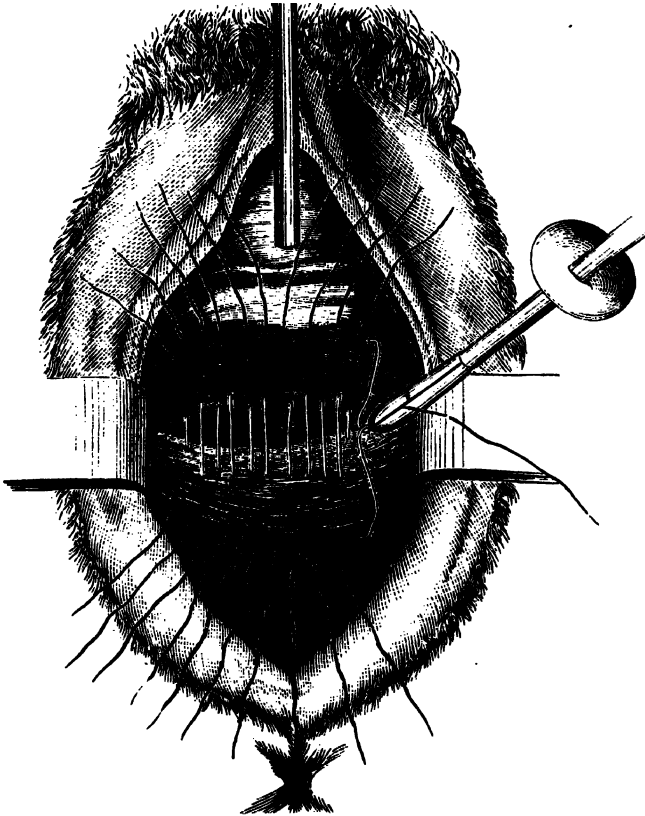
This procedure is resorted to in despair of accomplishing the cure of the fistula, and in the hope of relieving the patient from the intolerable annoyance attendant upon an involuntary and constant discharge of urine. It does not, of course, equal in efficiency closure of the vesical fistula, since it involves the necessity of the urine being retained in the vaginal canal, which is injured by its presence, and is proposed only for those cases in which, from extensive destruction of tissue, no hope of closure by suture or elytroplasty can be entertained. By it the vagina and bladder are rendered a common receptacle for urine and menstrual blood, the only advantage gained consisting in the fact that they may be retained and discharged at will through the urethra which remains open.

Closure of the vagina may be accomplished by two operations, episiorrhaphy and obliteration of the canal. The first, which consists in paring the inner surfaces of the labia majora and uniting them by sutures so as to cause their complete adhesion, originated with Vidal de Cassis, who performed it in 1833. The operation is exceedingly simple in its steps, but a very minute opening almost invariably remains just under the meatus through which a little urine exudes. This very nearly invalidates the

success of the method, for even a slight escape renders the patient uncomfortable.

The second consists in paring, not the labia, but the vaginal walls. Strips of mucous membrane being thus taken away, the bleeding surfaces are brought in contact by suture, and the bladder is kept empty by a catheter until union has occurred. This procedure, a far more valuable and reliable one than that of Vidal, was first performed by Simon, who has applied to it the name of "*Kolpokleisis*," or cross obliteration. Prof. Simon's first operation was performed in 1855, and since that time he declares that it has been resorted to in Germany in over fifty cases with complete success, and many cases suffering from incontinence of urine due

FIG. 105.



Obliteration of the vagina. (Simon.)

to great loss at the base of the bladder have been entirely relieved by it. He places a very high estimate upon the operation, as the following extract from a published letter from him to Dr. Bozeman of this city will show :—

"The reason why I have proved the validity of my claims of priority at such lengths, is simply this, that in my opinion kolpokleisis is the most important plastic operation which in the last decennia has originated from one single man. The operation of vesico-vaginal fistula by uniting the borders of the defect is indeed, in its present perfection and precision, a much more important acquisition than kolpokleisis, and probably the greatest achievement of our century in plastic surgery ; but it has not been carried to that perfection by a single man, but, on the contrary, operators of all nations have contributed their share to it. The 'uranoplastie' of our ingenious countryman—von Langenbeck—could alone be placed by the side of kolpokleisis, as far as the safety of the performance and its immediate success are concerned. It would rank higher still on account of its more frequent occurrence, if its benefit for the voice in increasing its purity could be secured in all or the majority of cases. But as in many cases this result is not obtained at all and in others only incompletely, kolpokleisis must be considered the more important operation, as in all cases it fully answers its purpose. This operation, which I invented at the time when the obliteration of the vulva, proposed by Vidal, proved inefficacious in re-establishing continence of urine, has already been performed more than fifty times with complete success. Through it many patients with incurable defects of the bladder have been freed of the most intolerable suffering, viz., incontinence of urine. I have myself succeeded in eighteen cases in effecting perfect obliteration, and every German surgeon who practises the art of curing vesico-vaginal fistules has recorded one or more successful cases of that kind."

In his earlier operations, Prof. Simon confined this procedure to the lower section of the vagina, but he now obliterates the canal just below the loss of substance.

Urinary Fistulæ requiring Special Treatment.

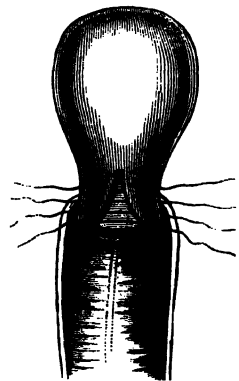
In the great majority of instances no other plan of treatment than the suture is necessary. There are, however, some cases of urinary fistulæ in which the application of the suture is difficult, or even impossible. These will now engage our attention.

Vesico-uterine Fistulæ.

Jobert first pointed out the proper method for reaching these. His plan is not at present employed, but that now regarded as most reliable is only a modification of it. It consists in slitting up the anterior lip of the uterus until the fistula is reached, vivifying its edges, and passing sutures directly through the cervix, as represented in Fig. 106, so as to approximate the walls of the cervix and the lips of the fistula.

In case the fistulous orifice be so high as to be

FIG. 106.



The cervix is slit to expose the fistula above, and sutures are passed.

considered beyond reach, the only remaining resource is to close the os uteri externum by suture, and allow menstruation to occur through the bladder.

Vesico-utero-vaginal Fistulæ.

For these the plan of vivifying the anterior lip of the os, and thus making the uterine tissue subservient to closure of the fistula, is peculiarly

FIG. 107.

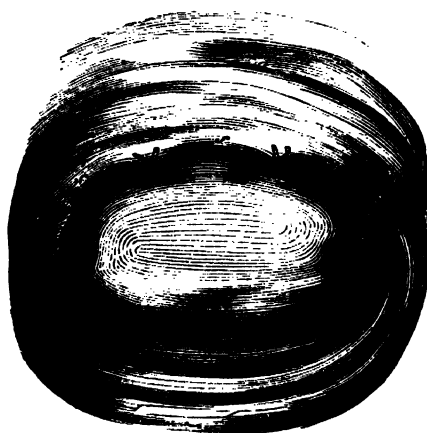


Anterior lip of fistula united to anterior lip of cervix. (Simon.)

applicable. The operation, represented at Fig. 107, is similar to that for ordinary vesico-vaginal fistula, the only difference being that one lip of the fistula is made of the vivified cervix uteri.

In case the anterior lip of the uterine neck be so completely destroyed that it cannot furnish the requisite tissue for this purpose, the vagina may be united to the posterior lip so as to throw the cervix into the bladder. Menstruation will afterwards occur into that viscus, and the blood thus accumulating be discharged with the urine.

FIG. 108.



Anterior lip of fistula united to posterior lip of cervix. (Simon.)

Fistulæ with Extensive Destruction of the Base of the Bladder.

It has already been mentioned that clytroplasty and kolpoplexis offer resources in these cases. To Dr. Bozeman, however, we are indebted for still another procedure, the first step of which consists in

dragging the uterus down daily for weeks before the operation by means of a pair of forceps by which the neck is seized. In this way the uterus is made to approximate the vulva. Then one lip of the cervix, being vivified, is brought into contact with the extremity of the remains of the vesico-vaginal septum, and firmly united with it by suture.

To facilitate this procedure, the cervix may with great advantage be slit to the vaginal junction, drawn forward and made to fill the space left vacant by the sloughing of the vagina.

Uretero-uterine and Uretero-vaginal Fistulæ.

In addition to the varieties of urinary fistulæ mentioned here, certain rare instances of union between the ureters and vagina or uterus have been recorded. A striking example of uretero-uterine fistula may be found detailed in the *Dictionnaire de Médecine*, vol. xxx., by M. Bérard. It is not only interesting in itself, but as displaying the method by which the diagnosis may be arrived at is worthy of special mention. Regarding it at first as a vesico-uterine fistula, from the fact that urine was discharged from the uterus, he arrived at a different diagnosis from these facts:—

1st. The urine flowed steadily from the cervix when the bladder was empty.

2d. The urine thus flowing was limpid, unlike that from the bladder.

3d. The patient being kept seated over a vessel for two hours so as to preserve all the urine flowing per vaginam, a catheter was passed into the bladder and the amount removed exactly equalled that which had escaped vicariously.

4th. Injecting the bladder with fluid colored by indigo, the urine passing per vaginam remained limpid.

5th. A sound being passed into the uterus and another into the bladder, their points could not be brought into contact.

Uretero-uterine fistula is by no means common; only one instance is mentioned by Dr. Emmet in his recent work as having occurred in his extensive experience. Dr. W. H. Baker,¹ of Boston, has recently published an interesting case, which was cured by dissecting up the ureter which ended at a point near the meatus urinarius, making an opening near the neck of the bladder, turning the ureter into this, and then closing the vaginal wound.

Dr. Henry F. Campbell,² of Georgia, reports an interesting case of uretero-vaginal fistula which he cured by this simple procedure: passing a small bistoury up the ureter, he slit its anterior wall, the knife passing

¹ N. Y. Med. Journal, Dec. 1878.

² Amer. Journ. Med. Sciences, Jan. 1880.

into the bladder. He then closed the vaginal surface of the cut thus made with silver suture. The patient rapidly and entirely recovered.

An exceedingly interesting instance of this variety of fistula is mentioned by Zweifel, of Erlangen, in which he removed the kidney of the diseased side with a successful result. The right kidney which was left proved quite sufficient for the wants of the economy.

There are eccentric and rare forms of fistula which I have not mentioned in my enumeration. For example, I have met with a case of vesico-abdominal fistula. Eight days after the operation of ovariectomy, about one pint of urine began to pass daily through the abdominal opening, the lower angle of which had been kept open for washing out the peritoneum. That the fistula was vesical and not ureteral was proved by the escape of colored fluid through the abdominal wound when injected into the bladder. This patient entirely recovered, and the fistula healed of itself.

Where a larger extent of denuded surface is required than can be obtained by paring the edges of fistulæ, Langenbeck and Colles have resorted to the following plan. Splitting the edges of the fistula, they have separated the two flaps thus produced, and bringing the opposing raw surfaces together, have secured them by suture.

Treatment of Long, Tortuous, Capillary Sinuses remaining after Operation by Suture.

Sometimes fistulæ situated near and involving the neck of the uterus will be cured in great part by suture, and yet, at one or both extremities of the original opening, long, capillary sinuses will remain, which, running a tortuous course, reach the bladder and render the operation a failure. Under these circumstances it is almost impossible to pare the edges of these tracts by knife or scissors, and the cautery which has been generally used for them commonly fails to cure them. For these I have adopted with the most satisfactory results the following plan. Having a dentist's burr made with cutting flanges, instead of dull ones, such as are usually employed, it is fitted to the ordinary dentist's treadle; as the burr is made to revolve rapidly by the action of an assistant's foot, it is passed up and down the sinus to be closed several times until the operator feels that the entire canal is thoroughly denuded. Then by curved needles, deep sutures are passed approximating its vivified walls.

By this means I have cured several fistulæ situated just in contact with the cervix uteri, which would have been exceedingly difficult of cure by any other method. It has the advantage of being very expeditious, and I would urge its claims in this class of cases.

CHAPTER XVI.

FECAL FISTULÆ.

Definition.—These, which are much less frequently met with than urinary fistulæ, consist in communications established between the vagina or vulva and some part of the intestinal tract.

Varieties.—They may be recto-vaginal, entero-vaginal, or recto-labial; the first being the most common, and the second the rarest of the varieties.

Causes.—The causes which produce them are almost identical with those which result in urinary fistulæ, viz. :—

- Prolonged pressure ;
- Direct injury ;
- Ulceration or abscess.

The first of these may produce them, as it does those occurring on the anterior vaginal wall, by creating an intense inflammation which results in sloughing, or the intensity of the pressure may be so great as rapidly to destroy the vitality of the part. Such pressure is most frequently the result of difficult parturition, but in rare cases it may arise from badly-fitting pessaries or scybalous masses in the rectum.

Direct injury by instruments used in delivery, or others employed for removal of impacted feces, may evidently produce them.

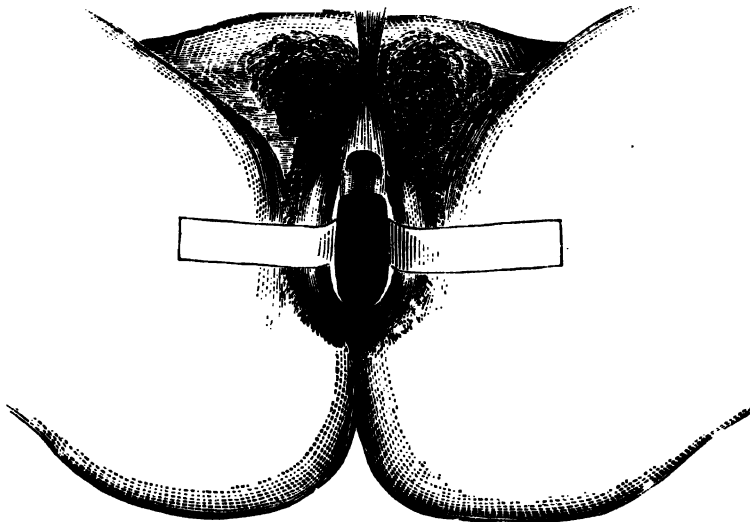
Ulceration or abscess much more frequently produces fecal than urinary fistulæ. For the recto-vaginal variety stricture of the rectum is a fruitful source, the stricture producing a retention of fecal matters which excites ulceration that may extend to the vaginal canal. An abscess between the vagina and rectum may cause a communication between the two, or burrowing towards one labium may open there and connect this part by a tract with the rectum. In the same manner a purulent collection has been known to make a junction between the caput coli and vagina. Lastly, syphilitic and cancerous ulceration may open a channel between the intestinal and vaginal canals. •

Symptoms.—The most prominent, often the only symptom which will attract the patient's attention, will be a discharge of offensive gas or fecal matter by the vagina. The amount which escapes will of course be governed by the size of the fistula, but the annoyance dependent upon the accident will not be so, for even the smallest quantity will be sufficient to render the patient utterly wretched by the offensive odor to which it gives rise.

Physical Signs.—The patient being placed upon the back, touch should be practised upon all the surface of the vagina. If the fistula be one of any magnitude, this will at once discover it. If not, careful exploration by the speculum will almost always do so. Sims's speculum should be introduced under the symphysis so as to lift the anterior wall of the vagina while the lateral walls are held aside by spatulæ. Should visual exploration not reveal the opening, the rectum may be filled with tepid water colored with cochineal or indigo, and its escape carefully watched for.

Prognosis.—Fecal fistulæ are more likely to be spontaneously recovered from than those of urinary character, from the fact that they give passage to gaseous and semi-fluid excretions, and not to an irritating fluid which is constantly dribbling away and keeping the fistulous walls from uniting. But even these are rarely recovered from unless surgical aid be brought to their relief.

FIG. 109.



Examination for fecal fistula.

Treatment.—Recto-vaginal and recto-labial fistulæ should always be treated by suture.

This is practised upon the same plan as that which is followed in vesico-vaginal fistulæ, with these exceptions, that the patient is placed in the position adopted in operating for stone, and that the speculum is so inserted as to elevate the anterior instead of the posterior vaginal wall. Before operation, the sphincter ani muscle should always be paralyzed by thorough stretching by the fingers, and after it a rectal tube should be retained, unless very annoying to the patient. After the operation, too, the rectum, which should have been thoroughly emptied by enema before it, should be kept perfectly quiet by opiates for ten or twelve days. When

evacuations are first permitted, laxatives should be employed in order to avoid tenesmus, which might destroy the union of the lips of the fistula.

In one case of recto-vaginal fistula I have introduced the speculum into the rectum, and closed the fistula on the rectal surface. The facility with which the operation was performed was surprising. Should the fistula exist only a short distance above the sphincter ani, the best method of treatment is to cut completely through the perineal body, vivify carefully, and close the wound.

Entero-Vaginal Fistulæ.

Entero-Vaginal Fistula, which consists in a fistulous tract between some part of the intestinal canal above the rectum, and the vagina, is rare, and when existing should be looked upon as an artificial anus, the closure of which would be attended by danger. If the opening be direct and there be no tract leading from one canal to the other, this would not be the case, but if a tract exist, the closure of its vaginal extremity would probably result in abscess excited by fecal matters passing out of the intestine.

Simple Vaginal Fistulæ.

Definition.—Under this head are grouped those forms of fistulous connection with the vagina which do not act as vicarious outlets for any neighboring organ, as, for example, peritoneo-vaginal, perineo-vaginal, and blind fistulæ.

Peritoneo-vaginal Fistula has been rarely met with. When it does occur it is attended by danger of descent of the intestine into the vagina, and entrance of fluids and air into the peritoneal cavity. One reason for its rarity is probably the fact, that, no excrementitious substance passing through it, it very generally disappears without becoming chronic. Should it not do so, no annoyance would arise from its existence, and it would be susceptible of immediate cure by suture.

Perineo-vaginal Fistula may result from partial closure of a ruptured perineum leaving a small orifice near the sphincter ani, or from penetration of the presenting part of the fœtus through the perineum. It may be readily cured by incision, ligature, cauterization, or injection, after the plan just pointed out in connection with fecal fistulæ.

Blind vaginal Fistulæ are those which lead to a purulent collection in some part of the pelvis. They will be fully treated of when considering pelvic abscesses, and nothing need be said of them here further than to mention the principles upon which their treatment rests: 1st, dilatation of the fistulous tract by tents or incision; 2d, exerting an alterative action on the walls of the abscess by iodine, iron, nitrate of silver, water, etc. etc.

CHAPTER XVII.

ACUTE ENDOMETRITIS.

I FREELY confess that the arrangement of no subject treated of in this work has caused me more perplexity, and is offered to the reader with greater hesitancy, than that which relates to the divisions of endometritis. Having personally no theory to sustain in reference to the matter, my sole desire is to present the subject in the manner which will best aid in its comprehension, assist the practitioner at the bedside, and favor a future advance in its pathology.

Throughout the literature of gynecology admissions will everywhere be found of the fact that endometric inflammation limits itself to the neck, the body, or even, according to one authority,¹ to the fundus of the uterus, and yet the two varieties of the affection are treated of as one, and one author² even goes so far as to assert that "the facility for locating its limit exclusively to cervix, body, or fundus rests only in the brain of the theorist." Barnes treats of the whole subject as "endometritis," yet, with characteristic candor, he says, "it appears to me that attention has been too strictly fixed upon the visible changes in the cervix and os uteri; and that, thus engrossed, the mind has been closed against the less telling evidence of changes in the body of the uterus."

All things being carefully considered, I have thought it best to adhere to the arrangement which follows, guarding the reader against the idea that any facility of differentiation, any dogmatic certainty of conclusion is claimed in reference to the matter. The arrangement simply seems to me, for many reasons, that which best meets the requirements of the present and favors the prospects of the pathology of the future.

The varieties of inflammation of the lining membrane of the uterus may be clearly expressed in the following manner:—

Endometr	{	Acute	{	General.
			{	Cervical.
				Corporeal.
	{	Chronic	{	General.
			{	Cervical.
				Corporeal.

¹ Dr. Routh's article on "Fundamental Endometritis."

² Dr. T. A. Emmet, *op. cit.*

Synonyms.—Acute endometritis has been treated of under the names of acute uterine leucorrhœa, acute uterine catarrh, acute internal metritis.

Frequency.—Acute inflammation of the lining membrane of the uterus is a condition which occurs quite frequently. Often running a rapid course, however, and ending in recovery or in chronic disease, it passes unrecognized in many cases. In this way I would explain many of the cases of suppressio mensium and congestive dysmenorrhœa, which we so often find ending in chronic disease. And thus also would I account for the profuse and painful attacks of leucorrhœa occurring with exanthematous fevers, and lasting for a length of time after they have passed off. It is very generally stated that acute metritis is seldom met with except as a sequel of parturition, and I agree in the statement as applying to parenchymatous inflammation, but it does not apply to endometritis, which often proves the source of sudden menstrual disorder and the cause of violent leucorrhœa.

Varieties.—The morbid process may affect the lining membrane of the cervix or of the body alone, or it may attack the whole uterine mucous tract, its selection of site being governed by its cause. Thus, that form which immediately follows parturition or abortion, or results from gonorrhœa, is likely either to affect the whole mucous tract or the cervical canal alone; while that which is due to sudden checking of the menstrual flow is more likely to be confined to the body.

Causes.—The causes of acute endometritis are the following:—

Direct injury;

Cold from exposure during menstruation;

Constitutional disease of septic or asthenic character;

Vaginitis, specific or simple;

Excessive venery;

Suppression of menstruation.

Examples of direct injuries which may produce acute endometritis are the introduction of the uterine sound or the intra-uterine pessary, the employment of tents or the application of chemical irritants, surgical operations, and intemperate coitus.

It is, probably, in some instances, through the instrumentality of this disease that those cases of fatal peritonitis which result from tents, sounds, and intra-uterine pessaries occur. Inflammatory action is first set up in the lining membrane of the uterus, and thence swiftly passes through the Fallopian tubes to the peritoneum.

Specific vaginitis or gonorrhœa will sometimes pass up into the cervix and body of the uterus, and out through the Fallopian tubes, creating pelvic peritonitis of most violent character. Even simple vaginitis, when of very severe form, may produce endometritis, though this is by no means common.

The peculiar blood state, attending upon and forming an element of

measles, scarlatina, variola, and roseola, and exerting its influence on all the mucous linings of the body, will sometimes result in general endometritis, and the hemic condition resulting from phthisis not rarely does so. Kiwisch has styled this, "metastatic constitutional catarrh."

Exposure to cold and moisture, great mental anxiety, or any other influence which suddenly checks the menstrual flow, not infrequently produces this disease. At the moment of exposure *suppressio mensium*, or congestive dysmenorrhœa, may take place, and from that time endometritis may exist. When we consider that such a sudden check of menstruation will sometimes result in hematocele of fatal character, it is certainly not to be wondered at that it may likewise produce the disease of which we are speaking.

Excessive venery, even where no violence is done to the uterus, may produce it by the prolongation of intense congestion of the organ kept up by this act.

Symptoms.—The disease demonstrates its presence in the non-puerperal uterus without any very violent symptoms.

Ordinarily the patient complains of pain, weight, and dragging in the pelvis; pain in the back, groins, and thighs; burning and pricking in the vagina, and vesical and rectal tenesmus. After four or five days there is usually a discharge of a viscid liquid, which in eight or ten days becomes creamy, purulent, and perhaps bloody; tympanites and sensitiveness upon pressure, and uterine tenesmus or "bearing-down pains," show themselves in severe cases, and at times, though rarely, there is active diarrhœa due to reflex irritation of the rectal nerves. Should the fluid discharged from the vagina be allowed to come in contact with the skin of the vulva, abdomen, or thighs, an intense cutaneous irritation is established, which may go on to excoriation and the development of pruritus of aggravated character. In two cases I have seen prurigo thus excited which spread over the entire body. If the reaction of this purulent discharge be examined into, it will sometimes be found to be acid and at other times alkaline. The explanation of the fact is this: the discharge from the uterus is alkaline and that from the vagina acid. If the irritating uterine fluid have established, as it very generally does, vaginitis, the acid secretion from this source overcomes the alkalinity of that from the other. If, on the other hand, no severe vaginitis exist, the discharge from the uterus presents its ordinary alkaline features.

Physical Signs.—Upon examination by touch the os uteri is found gaping, the cervix swollen and very sensitive to pressure, the body slightly enlarged, and the whole organ lower than normal in the pelvis. Through the speculum the cervix is found to look swollen, œdematous, and red, and from the pouting os pours forth either a clear, albuminous-looking fluid, muco-pus, or long tenacious shreds of cervical mucus. All explorations of the uterus should, as a rule, be avoided. The probe, if used at

all, should be employed with the greatest caution, and never unless passed through the speculum. The sound as ordinarily used should not be thought of. Probing will discover great sensitiveness throughout the uterine cavity, and the slightest touch upon the fundus will cause the discharge of a few drops of blood. Indeed, so great is the engorgement that even the introduction of the speculum will often cause blood to flow from the cervix.

Bimanual examination will discover the uterine body enlarged, and tender upon pressure, so that one who judged hastily, and without sufficient knowledge of the subject, would be very apt to diagnose with great positiveness acute parenchymatous metritis. There can be no doubt that many of the reported cases of that affection have been nothing more than instances of this form of endometritis.

Differentiation.—The only diseases with which this would with any probability be confounded are, periuterine cellulitis, pelvic peritonitis, and acute vaginitis. In the first two of these, constitutional disturbance is generally more marked and excessive than in this; they are often preceded by chill, and usually by more intense febrile action, and greater elevation of temperature. This, however, is not universally true. The last is very generally attended by a lesser degree of general disturbance. No positive conclusion can usually be arrived at without physical exploration, which in pelvic inflammation will discover fixation of the uterus, hardening of periuterine tissue, and excessive tenderness when parts other than the uterus are compressed by conjoined manipulation. It will generally be noticed that in cellulitis and peritonitis there is no great increase of uterine or vaginal discharge.

Pathology.—In its first stage acute endometritis consists in an intense and active hyperæmia of the mucous lining of the uterus, which is red, swollen, œdematous, and softened. Its surface is spotted, Scanzoni declares, from congestion of the capillary network around the mouths of the utricular follicles. When the second stage has set in, the cavity of the uterus is found to contain an excess of mucus or creamy-looking pus, which may be more or less mingled with blood. If the cervix be involved in this inflammatory engorgement, the mucous membrane of its vaginal portion participates markedly, as an examination by the speculum will prove.

In the mucus just mentioned the microscope reveals the presence of thousands of cells and sometimes entire casts of the utricular follicles.

“Ordinarily,” says Scanzoni,¹ “acute catarrh of the mucous membrane of the uterus is accompanied by a congestive swelling of the muscular substance of the womb, and most generally it is possible, particularly in the most internal layers of the organ, to see with the naked eye, that the

¹ Diseases of Females, American ed., p. 193.

vessels are gorged with blood. There ordinarily result from it an infiltration and a softening, which are much greater in the layers of the parenchyma of the uterus nearest to the mucous membrane. Hence, these alterations of tissue which are characteristic of acute parenchymatous metritis ordinarily accompany catarrh of the mucous membrane, when this has attained a high degree of intensity." "The whole substance of the uterus," says Klob,¹ "generally appears to be increased, and its tissue more vascular and succulent, especially in the layers nearest the mucous membrane."

Acute endometritis very rarely shows itself before puberty.

Complications.—Its complications are acute metritis, urethritis, vaginitis, vulvitis, cystitis, salpingitis, pelvic peritonitis, and various eruptive disorders, the results of scratching excited by pruritus vulvæ.

The first of these complicating conditions is of so much moment as to require special consideration.

The time has, I think, arrived when, with our present light upon the subject, acute parenchymatous metritis should be given a subordinate place in pathology instead of the prominent one which it formerly occupied. With reference to its frequency as a primary affection, many conflicting statements will be found. This arises partly from the fact that some have written of it without making any distinction between the forms occurring in the puerperal and non-puerperal states, while others have confined their remarks, as is here done, to the disease in the latter condition; partly from endometritis, active congestion from suppressio mensium, and peritonitis and cellulitis having been mistaken for metritis; and in great part from the difficulty of gaining post-mortem evidence, the disease generally being recovered from. As a complication of inflammation of the internal mucous or external serous covering of the uterus, parenchymatous inflammation is universally admitted. As a pathological entity, however, I question whether any well-authenticated case of this affection is on record. The descriptions of the disease which are given in recent works, such, for example, as those of Courty, Gallard, and Scanzoni, each of whom devotes considerable space to it, appear to me to have come down to us as a matter of literary tradition rather than of clinical research.

While searching for a case of pure uncomplicated metritis, I have seen numbers of cases which were regarded by others as of this character, and quite a number which I viewed as such until enlightened by post-mortem or other evidence. Rokitsky² declares that, "in acute inflammation of this organ, generally the lining membrane of the uterus is affected primarily, and that this is scarcely ever the case with the uterine tissue, as

¹ Path. Anat. Female Sec. Organs, American ed., p. 231.

² Pathology Anat.

far as can be demonstrated by the pathological anatomist, with the exception of the reaction following traumatic influences, especially of the vaginal portion."

In his recent work Klob¹ takes still stronger ground as to the existence of uncomplicated metritis, and asserts that never having met with an instance of the disease, he is forced to describe it upon the authority of others.

Some practitioners are prone to regard every case of inflammatory action in the pelvis, accompanied by great tenderness over the uterus, as metritis. Such cases are much more frequently due to pelvic cellulitis or peritonitis, which are by no means rare affections, or to active congestion, caused by suppression of the menses or excessive coition. After parturition, either at term or premature, true metritis does occur not unfrequently, but this variety does not concern our present investigation. As regards that form which we are considering, I feel convinced that, if the experienced practitioner will put aside his preconceived views and interrogate the results of his observation, he will find, if he has his attention aroused to the frequency of the diseases which simulate it, that he has met with this affection very rarely.

Course, Duration, and Termination.—Acute endometritis, when occurring in the non-puerperal state, may, without treatment even, go on to recovery, generally lasting from a month to six weeks, and perhaps passing through its whole course without its existence having been diagnosed. It sometimes ends in the chronic form of mucous inflammation, or even in slight hyperplasia, the superficial, subjacent, connective tissue becoming affected. It is doubtful whether any severe case of endometritis runs its course without being to a greater or less extent complicated by a slight degree of parenchymatous disorder. As already stated, the disease may end in chronic endometritis or in recovery. It may, likewise, end in death; inflammatory action spreading along the Fallopian tubes and causing salpingitis, which, by resulting in free purulent discharge into the peritoneum, may establish inflammation there.

Prognosis.—In spite of all these possibilities the prognosis is always favorable if the patient take ordinary care of herself and yield to a judicious plan of treatment.

Treatment.—The diagnosis having been clearly made, treatment should be at once established. Complete rest of mind and body should be regarded as essential points. In severe cases, the patient should be kept perfectly quiet upon her back in bed, and not allowed to leave it or to assume the sitting posture even to satisfy the calls of nature. Opium should be freely given by mouth or rectum for the production of perfect nervous quiescence and for the relief of pain: In severe cases one grain

¹ Path. Anat. Female Sex. Organs, American ed., p. 231.

of powdered opium or its equivalent of morphia should be administered every third hour. This drug, I feel sure, not only acts as a sedative to the nervous system, and a quieter of pain; it absolutely modifies the inflammatory process by its influence upon the nerves. The bowels, unless constipation exists, should not be acted upon by cathartics, and ordinarily no other medicine than opium should be administered. Over the hypogastrium a soft, warm poultice of powdered linseed should be placed and covered by oiled silk. This need not be renewed oftener than once in twelve hours, for the oiled silk will preserve its warmth. The patient should not be annoyed by leeches or cups. Even if high febrile action show itself, this can be readily controlled by appropriate administration of tincture of veratrum viride. The diet should be very simple, and should consist of fluid food chiefly, as milk, beef-tea, etc. A condition of intestinal quietude should be encouraged, and therefore such food as involves the elimination of a small amount of excrementitious matter should be allowed. By these means motion in the abdominal cavity may be lessened, and rest be assured to the diseased part. As soon as free secretion of muco-pus begins to show itself, the vagina should be gently syringed out three times daily with copious injections of very warm water. For the proper accomplishment of this the patient should turn so as to lie across the bed, in the French obstetric position, on the back, with the buttocks over the edge of the bed, which has been protected by India-rubber cloth, each foot being supported by a chair. A nurse, then placing between the thighs a tub containing three or four gallons of water, should pass the nozzle of a Davidson's syringe up to the cervix, and for fifteen minutes project against it a steady stream. All examination by speculum, probe, and, after a diagnosis has been made, even by the finger, should be avoided unless some special indication demand it. Astringent injections and all vaginal applications should be avoided. The affection which we are treating is located in the uterus, not in the vagina, and such applications merely annoy the patient and aggravate the disease. The warm injections which have been advised act as poultices or fomentations to the whole internal surface of the pelvis, at the same time that they insure cleanliness to the vagina and remove from it a fluid which, if left there, might excite vaginitis. Under this plan of treatment the patient should be kept until recovery, or until we are admonished by time that the disease has passed into its chronic form and requires different remedies.

To one accustomed to the advice to apply leeches to the cervix or perineum, pass the speculum, and apply solid nitrate of silver to the cervical canal, inject the vagina with solutions of persulphate of iron, keep the bowels constantly active by saline cathartics, etc., this plan may appear too inefficient to be relied upon. Of any one entertaining this doubt I would ask a trial and comparison of the two methods before he arrives at a decision which will guide his future practice. If his experience agree with mine, I do not doubt the resulting verdict.

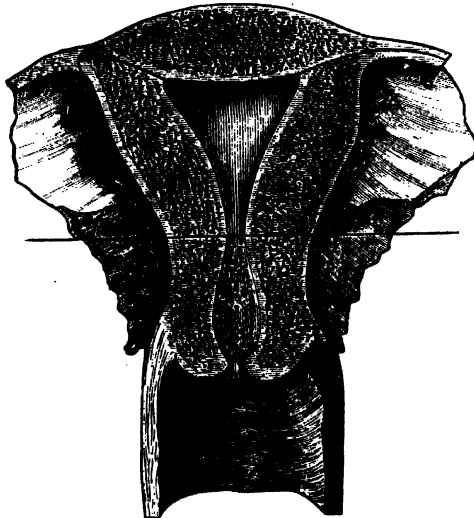
CHAPTER XVIII.

CHRONIC CERVICAL ENDOMETRITIS.

WHEN inflammation of acute character affects the uterus, it has a marked tendency to invade the entire organ, and to involve both cervix and body, but with chronic inflammation this is not the case. Being of a lower grade of intensity, it more strictly confines itself to the mucous membrane and limits itself to the body or cervix. Such limitation is, however, neither universal nor absolute, sometimes subjacent parts being more or less implicated, and at others the mucous membrane of the entire organ being simultaneously and equally involved.

Definition.—By the term chronic cervical endometritis is meant chronic inflammation of the mucous membrane, extending from the os internum to the os externum, as represented by the dots in Fig. 110.

FIG. 110.



The dots represent the site of chronic cervical endometritis.

Frequency.—Of all diseases of the genital system of the female this is without doubt the most frequent, and, although not in itself a malady of dangerous character, may prove the starting point for some of the most serious and rebellious of uterine disorders. Exposed as the cervix uteri

is to injury during coition, laceration from parturition, and irritation from walking, riding, and lifting, it is not surprising that its complicated investment should frequently become the seat of disease.

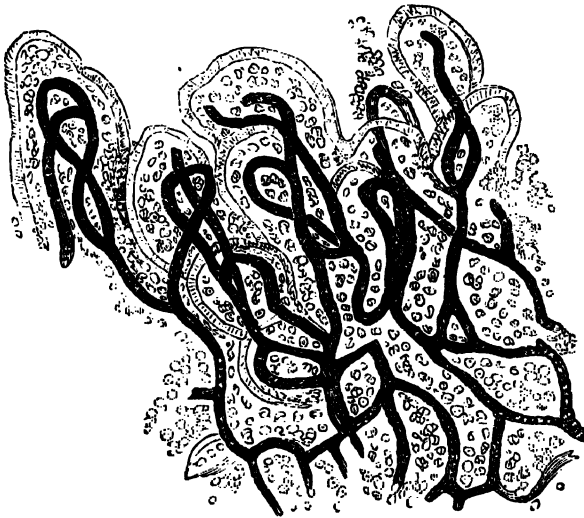
This affection too is a frequent source of menstrual disorders, and very commonly produces sterility.

Synonyms.—It has been described under the names of cervical catarrh, cervical leucorrhœa, and endo-cervicitis.

Anatomy of the Cervical Mucous Membrane.—The cavity of the cervix uteri is a fusiform canal, measuring about one inch and a quarter, beginning at the os internum above and ending at the os externum below. On the anterior and posterior walls of the cervix are ridges, from which folds are given off which are arranged with regularity, and run obliquely upwards and outwards, to end in other indistinct lines on the sides of the canal. This arrangement of mucous membrane has received the name of *arbor vitæ*.

Between these folds numerous mucous glands are seen, which are called by some the glands of Naboth.¹ Dr. Tyler Smith² estimates that a well-

FIG. 111.



Villi of canal of the cervix uteri, covered by cylindrical epithellum and containing looped bloodvessels. One hundred diameters. (T. Smith.)

developed virgin cervix probably contains at least ten thousand of these follicles. The mucous membrane forming these folds or *rugæ* is covered

¹ A great deal of curiosity attaches to the nature and function of these glands. Some regard the Nabothian glands as identical with the muciparous follicles, others look upon them as occluded glands distended by their retained secretion.

² On Leucorrhœa, Am. ed., p. 38.

over by cylindrical and ciliated epithelium and studded by villi, which are found in considerable numbers upon the larger rugæ and other parts of the mucous membrane. (Fig. 111.)

The natural secretion of the cervical canal has been shown by M. Donn  to be alkaline, unlike that of the vagina, which is acid.

Pathology.—Cervical endometritis consists in inflammation of all this structure and consequent alteration of its condition. The mucous glands are especially involved in the morbid action, the disease chiefly consisting in glandular inflammation. The glairy mucus which is secreted in large amount as one of its symptoms is the characteristic discharge of these structures. Looked at with a strong glass in post-mortem examinations of this disease, they are seen enlarged and elevated, and, according to Aran,¹ their mouths may be seen very much dilated. In some cases it becomes complicated by granular degeneration. The villi or papillæ, especially those on the vaginal face of the cervix, become diseased. At first there is a loss of the normal supply of epithelium, which produces a slight and very superficial abrasion. This becomes in time more distinct and marked, from destruction of the villi themselves over spaces of greater or less extent. If this process of destruction should go on and affect the deeper tissues, a true ulcer would be formed, and no one would ever have denied the name of ulceration to the existing condition, but it does not thus progress. In time an hypertrophy occurs in the villi, which increase in size, project like so many hairs from the surface, and give to the os and cervix an appearance which has caused the term granular degeneration to be applied to it. This state affects the vaginal portion of the cervix chiefly, but may extend up the canal.

Another pathological state, which is occasionally met with as a complication of cervical endometritis, is an eversion of the os and lower portion of the canal to such an extent as to keep up inflammation there by the friction of the membrane, thus exposed, against the floor of the pelvis. Some very obstinate cases are due to this condition.

The diseased mucous membrane pours forth with great activity large amounts of thick, tenacious mucus, which is loaded with epithelium and sometimes tinged with blood.

Predisposing Causes.—It is a matter of some moment that the etiology of this affection should be studied under two heads—predisposing and exciting. The former includes :—

- Natural feebleness of constitution ;
- The existence of a cachexia, as tuberculosis or scrofula ;
- Impoverishment of the blood from chlorosis or other cause ;
- Prolonged mental depression ;
- Insufficient nutriment ;

¹ Mal. de l'Ut rus, p. 423.

Excessive lactation ;
 Frequent parturition ;
 Subinvolution ;
 Styles of dress which depress the uterus ;
 Want of exercise and fresh air.

These influences either act injuriously upon the nervous system, and thus interfere with the circulation and nutrition of the lining membrane of the cervix ; or by directly disordering the vessels and nerves of the uterus render it ready for the establishment of disease by some cause which would have exerted no baneful effect upon a woman in perfect health.

It may naturally be asked why some of these influences should especially produce this disease. My answer is, that they do not do so. Sometimes they cause chronic pneumonia ; at other times granular eyelids ; at others follicular faucitis ; and again at others chronic cervical endometritis.

Exciting Causes.—Chief among these may be enumerated :—

- Displacements of the uterus, especially flexions ;
- Excessive or intemperate coition ;
- The use of intra-uterine pessaries ;
- Puerperal endometritis ;
- Acute non-puerperal endometritis ;
- Exposure or fatigue affecting a subinvoluted uterus ;
- Efforts at production of abortion and prevention of conception ;
- Vaginitis, specific or simple ;
- Obstructive dysmenorrhœa ;
- Cervical polypi ;
- Laceration of the cervix.

Many other causes might be enumerated ; but these will suffice to show the nature of those influences which act as excitants of the disease. Many of those mentioned would fail to produce it in a uterus which had not been prepared for their action by depreciating constitutional conditions. When treatment is established for the cure of the disease, if it be inaugurated and pursued without regard to the predisposing causes, it will often prove inefficient or futile in cases which would yield to a plan that showed a recognition of their importance. Appreciating highly, as I do, the value of local treatment in uterine affections, were I in the management of the disease limited entirely to one kind—local or general—I do not hesitate to say that I would infinitely prefer the latter. A removal from a city to the country, the use of mineral and vegetable tonics, plenty of good, nutritious food, the observance of regular hours, the systematic practice of exercise in the fresh air, and the pleasures of cheerful society, will, I feel confident, do far more for the patient than a weekly visit to the office of a physician and the reception of the most appropriate local treatment which science can afford. But better than either plan is the judicious combination of the two. They should go hand in hand. My

wish is to keep prominent the fact, that of the two the general treatment is the more important in the disease which now concerns us, as it is in many others which we shall come to consider.

Symptoms.—Cervical endometritis may exist for a length of time without presenting any symptoms of sufficient gravity to warn the patient of its presence. Even a leucorrhœa, which is somewhat abundant, often fails to attract her attention. The answer to a question as to its existence will often be a negative one in cases in which the practitioner will, by the speculum, discover a considerable amount in the vagina. In the great majority of cases the disease will soon announce its existence by some or all of the following signs. The first symptom which will attract attention will probably be dragging sensations about the pelvis. These will soon be followed by pain in the back and loins, which will be very much increased by exercise or muscular efforts. Then a more or less profuse leucorrhœa will be noticed, the discharge as it issues from the vulva resembling boiled starch or thick gum-water, and often irritating the vulva and vagina to such an extent as to produce inflammation in them. Menstrual disorders may now show themselves. The discharge may be either too scanty or too profuse, too frequent or too infrequent, and to a certain extent painful; sometimes, though not often, decided dysmenorrhœa will exist.

Usually before the disease has existed for a long period, the constitution of the patient will show signs of becoming implicated. She will become nervous, irascible, moody, and often hysterical. Her appetite will diminish and digestion grow feeble, so that impoverished blood will soon be observed as a result of impaired nutrition. With some or all of these signs of the existing disorder, the patient may continue for a length of time without suffering from others of more annoying or graver character. Complications may, however, rapidly develop themselves; cystitis, cervical hyperplasia, and vaginitis coming on and proving exceedingly troublesome. At times pain during sexual intercourse constitutes a prominent sign of cervical disease, but it belongs rather to cervical hyperplasia than to endometritis, the former having added itself as a complication to the latter, and thus produced the symptom. Sometimes nausea, and even vomiting, present themselves as symptoms, and these, together with the digestive disorder before mentioned, produce a deterioration in the nutrition of the patient.

Although these symptoms are enough to make us confident of the existence of uterine disorder, they by no means furnish reliable grounds for a positive diagnosis. This can be arrived at only by physical exploration.

Physical Signs.—The patient being placed upon her back, and the finger of the examiner introduced into the vagina, the os uteri will probably be found in its usual position in the pelvis, for the weight of the uterus is not increased, the connective tissue not being involved. The os

may be somewhat enlarged and its lips slightly puffed, or it may be roughened on account of granular degeneration. Sometimes, however, severe cervical endometritis may exist without any enlargement of the os, or any trace of abrasion or granular degeneration. If the finger be placed under the cervix and that part raised by it, pain will be complained of, though not to any great extent. This will be most marked opposite the os internum. No other affirmative sign can be elicited by this means, and the speculum should then be used. By this the os will be seen to be in the condition just described, and from it will be found to exude a long string of tough, tenacious mucus which will closely resemble the white of egg. If entangled by a small mass of cotton attached to the end of a whalebone rod, it will be found to be so viscid and resisting that it cannot be drawn from the canal. It will resist even a stream of water thrown with some force upon it, and very often is removed only after several efforts by this or other means. The cervix will usually be found to be somewhat enlarged. Its tissue may present a swollen, puffed appearance, or be intensely red as if in a state of granular degeneration, which will upon close inspection be found to be due to removal of its investing epithelium and the occurrence of hypertrophy of the villi. Should this condition exist, it will afford relief to the mind of the inexperienced gynecologist, for the diagnosis of the case will be clear. But another state of things may be discovered which will leave him in doubt. Upon removing the plug of obstructing mucus, he may discover no evidence of disease. The os is no larger than it should be, its tissue is not reddened, no degeneration exists, in fact nothing is found explaining the backache, nervousness, impaired nutrition, and profuse leucorrhœa which led him to advise and urge the examination. The case is simply one of cervical endometritis which affects the glands of the canal without having produced granular degeneration.

It is often a matter of great difficulty to decide whether endometritis is confined to the neck or extends through this part into the body. In many cases a certain conclusion is impossible. The evidences by which it may be usually arrived at are these: in the former case the neck alone is found enlarged and tender to touch, conjoined manipulation, and the probe; in the latter, the body also shows these signs of implication of its tissues in the morbid action. The discharge resulting in the former is more thick, tenacious, and difficult of removal than in the latter variety. Lastly, the constitutional symptoms attending the latter are ordinarily graver than those created by the former.

Course, Duration, and Termination.—Cervical endometritis is not a self-limiting disease, and consequently its duration will depend upon circumstances which control its progress. It may unquestionably disappear without medical aid. Any alterative influence which exerts a complete change in the economy, as, for instance, parturition, entire alteration of the habits

of life,* or some change equally decided, sometimes results in a cure. But it is certainly safe to say that, unchecked, it frequently passes, in multiparous women, into cervical hyperplasia, which would probably draw in its train displacement, and all the long list of ailments which make the lives of women suffering from uterine disease so burdensome.

Prognosis.—The prognosis of this affection will depend upon the degree of glandular disease accompanying it. If the mucus which marks inflammation of the glands be slight in amount, and not very tenacious in character, whatever be the extent of coincident granular degeneration, the prognosis is favorable. When, on the other hand, there is little granular disease, and a large amount of thick, resisting mucus hangs from the cervical canal, the prognosis, according to my experience, is very doubtful, and sometimes hopeless, unless very radical measures be adopted. If every practitioner will look back into his experience, he will see that in all severe cases he has either been forced to resort, for their cure, to measures which absolutely destroy the diseased glands, or that the patients in time, wearied of his insuccess, have gone for treatment elsewhere. Let it be remembered that I allude now only to very severe cases where the glands are profoundly involved. In regard to such, I feel sure that the experience of others must agree with mine.

Even in minor cases great caution should be observed as to fixing the time at which recovery will take place. Even in the mildest case which has lasted for some time, from four to six months will probably elapse before perfect cure can be accomplished, and even after this a relapse will be very likely to occur unless preventive measures be adopted and strictly adhered to.

Treatment.—The disease consisting in cervical endometritis, the efforts of the practitioner should be directed to producing an alterative influence upon a mucous membrane which is in a condition of chronic inflammation, and the avoidance of all influences which may cause it to spread to adjacent tissues. These ends will be best accomplished by the following means:—

- General regimen;
- Emollient applications;
- Alterative applications;
- Ablation or destruction of the diseased glands.

General Regimen.—"The first care of the practitioner," says Sir Charles Clarke, "should be to remove, if possible, the causes of the disease. . . . Women who live in a moist atmosphere, who keep bad hours, who spend much of their time in bed, or who inhabit hot rooms (being generally weak women, and having a relaxed vagina), will be apt to be affected by the complaint." All such unfavorable circumstances should be modified. If any depressing influence, such as lactation, any habitual discharge, or

any cause for mental anxiety, be discovered, it should be carefully removed, and the patient, unless absolutely plethoric, be put upon the use of vegetable tonics, the mineral acids, and preparations of iron. The functions of the alimentary canal should be constantly supervised. The diet should be mild and unstimulating, but most nutritious. No system of starvation should be entered upon, for the tendency of the disease is to the production of spanæmia, and this we should combat. A course of full diet is, on the contrary, often decidedly indicated; for, as I have elsewhere remarked, women commonly depreciate the vital forces by an unintentional starvation. Under these circumstances I am often in the habit of prescribing the following course: the patient is directed to eat fresh animal food, eggs, butter, wheat, etc., three times a day at regular meal times. Then between breakfast and the midday meal to take either a tumbler of fresh milk, half a tumbler of cream, or a teacupful of beef-tea, and to repeat this fluid but highly nutritious repast between the midday and evening meal, and again when retiring at night. It is surprising to see how often patients will rapidly improve in all their functions under this course. The digestion will improve and constipation disappear or become greatly ameliorated, and under the improvement in the tone of the nervous system sleep will become more profound and refreshing. All spices and stimulating condiments should be avoided. Every day, unless some special contraindication exist, the patient should take fresh air and exercise, by carriage or on foot for a time, which should be limited by the circumstances of the particular case. If she should be unable to do this from any cause, she should be thoroughly protected, and pure air, even in winter, be allowed to circulate freely in her chamber, all the doors and windows of which should be opened for two or three hours daily. This plan, which is suggested by Prof. Byford, of Chicago, I have found a most excellent one. The bowels should be kept regular by saline cathartics, and the skin in proper state by occasional baths. Care must be observed not to depreciate the strength by catharsis, and, to prevent this, a ferruginous tonic may be advantageously combined with a cathartic, as in the following mixtures:—

R. Magnesæ sulphatis, ℥ij.
 Ferri sulphatis, gr. xvj.
 Acidi sulphurici dil. ℥j.
 Aquæ, Oj.—M.

One ounce (two tablespoonfuls) in a tumbler of iced water every morning upon rising.

R. Sodæ et potass. tart. ℥ij.
 Vini ferri amari (U. S. D.), ℥ij.
 Acidi tartarici, ℥iij.
 Aquæ, ℥xiv.—M.

One ounce in a tumbler of iced water ever morning upon rising.

Should one draught not be sufficient, two or even three may be taken daily, for the result will prove tonic and reparative as well as cathartic.

If much disturbance of the nervous system should exist, the bromide of potassium in doses of five to ten grains, three times a day, will be found very useful.

The appetite and digestion are so often impaired that special attention will generally have to be directed to alleviation of that collection of symptoms which are grouped under the head of dyspepsia. The stomach sympathizing with the uterus does not perform its functions with vigor; the gastric juices appear to be wanting or inefficient, and fermentation of the food often takes the place of digestion. Under these circumstances I can recommend from lengthly experience with it the following digestive tonic:—

R. One rennet, washed and chopped.

Sherry wine, Oj.

Macerate for twelve days, then decant, filter, and add—

Dilute nitro-muriatic acid, ℥ij.

Tinct. of nux vomica, ℥ij.

Subnitrate of bismuth, ℥ij.

One tablespoonful in a quarter of a tumbler of water before each meal.

This prescription combines the tonic properties of nux vomica and the peculiar alterative influences of bismuth, with a fluid which resembles the gastric juice. In many cases of habitual indigestion I have obtained from it the best results.

Emollient Applications.—The cervix should be irrigated every night and morning, by warm water thrown against it. To the water may be added chloride of sodium, glycerine, boiled starch, infusion of linseed, slippery elm, or tincture of opium. The irrigation should be so planned as to last for ten or fifteen minutes without fatiguing the patient or proving a source of annoyance to her. The methods for doing this are so fully described elsewhere that they need not be repeated here.

In many cases of this affection of not very aggravated character, and which have not advanced to the production of granular degeneration or hyperplasia, if this plan of general tonic treatment and soothing injections be faithfully carried out, all complaints will cease on the part of the patient, and a cure be gradually effected. Should this result not be attained, or should the disease be discovered at the first examination to have profoundly involved the cervical glands, resort must be had to applications to the diseased surface through the speculum.

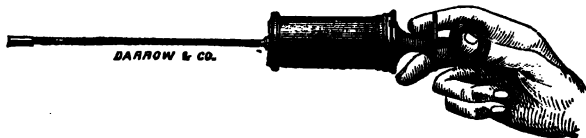
In cases in which the lining membrane of the cervix is in a condition of granular degeneration, and the mucous glands are very little affected, cure can be almost as readily accomplished as where the same granular disease exists on the vaginal face of this part. But such cases will be treated of under the caption of “Granular Degeneration of the Cervix;”

they do not properly come under consideration at the same time with the more obstinate disease of the glands. To make this statement more clear; cervical endometritis consists of glandular inflammation, which is sometimes complicated by granular degeneration. In some cases the glands are very slightly diseased, while the villi of the canal are decidedly so; these come under consideration rather as "Granular Degeneration," which will be treated of elsewhere, than as true endometritis.

Alterative Applications.—It will be found that cervical endometritis, existing in a canal the os externum of which is contracted, will always prove much more difficult of cure than in one where this part is dilated. The degree of dilatation will generally be found to exert a marked influence over the tractability of the case. When then it is discovered that the disorder does not disappear under the influence of time, and the simple measures already mentioned, as one of ordinary catarrh, it is always advisable to dilate this part before proceeding with more decided measures. If this be neglected, and the practitioner satisfy himself with passing through the constricted orifice, nitrate of silver, iodine, pencils of zinc, alum, iron, etc., once or twice a week, no good whatever will result. After months or even years of treatment, he will discover that the mild means which he has adopted have left the disease uncontrolled; or that the severe ones have increased contraction of the os, which renders menstruation difficult and painful.

The best and simplest method for overcoming the difficulty is to snip the external fibres of the os by scissors for an eighth of an inch, touch the raw surfaces thus made with nitrate of silver or solution of persulphate of iron to prevent union, and keep plugs of carbolized cotton in the canal for a week. Should there be any objections to this procedure, which is painless, free from danger, and effectual, the same thing may be imperfectly accomplished by repeated dilatation by metallic sounds, or by the use of a tent of sea-tangle or sponge. The use of a tent which dilates the os externum, not passing within the os internum, is to a great extent free from the dangers attaching to those which invade the body. The os ex-

FIG. 112.



Syringe for removing cervical mucus.

ternum having been dilated by one of these methods, the first if there be no special objection to it, so that free escape of the secretion of the muciparous glands may occur, the canal must be thoroughly cleansed. Unless this be systematically done it will be imperfectly accomplished, and the

thick, tenacious material will completely shield the diseased glands and neutralize any chemical agent before it can reach them. The most efficient means for removing this plug is the syringe represented in Fig. 112. It is a syringe of hard rubber, two inches in circumference, holding an ounce, and so arranged as to be worked with one hand, the index and middle fingers surrounding the neck, and the thumb retracting the piston. Upon the extremity of its long pipe is slipped a bit of gutta-percha tubing, the free portion of which projects half an inch. This free portion readily enters the cervix, and goes up to the os internum. When introduced, the piston is powerfully retracted, the mucous plug is sucked in, and the cervix is left entirely clean.

Where the material which covers the os is purulent or starchy, and not tenacious, a stream of water may be projected from this syringe against the cervix, and the whole be removed by suction; or this may be done by a small pledget of carbolized cotton wrapped around a staff of whalebone, hickory, or bamboo, eight inches long, as thick as a pipe-stem, and tapering toward its extremity. Should the first pledget become saturated, it can readily be slipped from the staff and another wrapped in its place, or several rods may be prepared and kept ready for use.

FIG. 113.



Rod eight or nine inches long, wrapped with cotton.

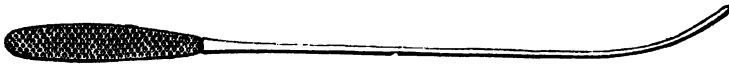
When the characteristic plug of tenacious mucus is present, there are but two methods which entirely remove it: one is the exhausting syringe; the other the use of a dry sponge as large as a raspberry fixed in a long-handled sponge holder, or held in long dressing forceps such as those shown in Fig. 2, and passed into the cervical canal and rotated so as to entangle the thick mucus. The sponge should be thrown away afterwards, for the repetition of its use might convey disease from one patient to another. A supply of such small pieces of sponge should be kept at hand, in order that a new one may be used for each patient. After having been cleansed by one of these methods, the cervical mucous membrane is exposed, and applications can be made to it with some prospect of their coming in contact with the diseased glands embedded in the jungle of convolutions which constitute the arbor vitæ. A neglect of the systematic removal of this material, I believe often prevents cure, and hence I am so minute in reference to what may appear an insignificant point."

It is a fact, universally admitted in every department of therapeutics, that certain substances of greater or less strength as escharotics have the property, when applied to inflamed mucous surfaces, of so modifying the morbid action existing in them as to diminish its intensity and in time to check its progress. It is upon this principle that chronic inflammations

of the fauces, urethra, bladder, and many other mucous surfaces are treated, and it is equally applicable to the part which we are considering. Alterative and escharotic substances may be applied to the lining membrane of the cervix uteri in the following ways: by painting solutions over the canal by a brush or dossil of lint, by touching the whole diseased area with drugs in solid form, or by leaving them for varying lengths of time in contact with the walls of the canal in a solid form, or upon cotton which has been saturated with solutions of them.

Should the case be one of short standing and of no great degree of severity, the cervical canal should be thoroughly painted over with the compound tincture of iodine, a strong solution of nitrate of silver, glycerine saturated with tannin, or a saturated solution of carbolic acid. This may be done by using a brush of pig's bristles, which is far superior to one of camel's hair; or, by wrapping cotton around a delicate probe of silver or whalebone and saturating this with the solution. Emmet's silver or Budd's vulcanite probe answers an excellent purpose.

FIG. 114.

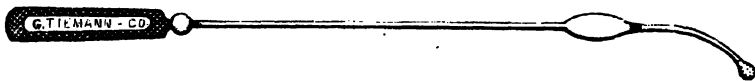


Budd's elastic probe.

Should the practitioner prefer to use a solid caustic, the nitrate of silver may, with great advantage, be employed, though the means generally adopted for applying this substance are inefficient. If a straight stick of lunar caustic be fixed in a quill or held in the grasp of a pair of forceps and passed into the os, by no possibility can the procedure accomplish what is desired. It may canterize, and will probably do so with objectionable thoroughness, a quarter or half an inch of the lower portion of the canal; but how can it be expected to go upwards for an inch and a quarter and come in contact with the whole surface inflamed, a surface remarkable for its inequalities and convolutions? Sir Benjamin Brodie many years ago, according to Dr. Barnes, of London, advised fusing nitrate of silver and allowing it to cool upon the tip of a probe for cauterizing sinuous tracts; and Chassaignac, of Paris, applied the same substance to the cavity of the womb by coating platinum wires with it. Dr. F. D. Lente, of Cold Spring, N. Y., has experimented extensively in reference to this subject, and the result of his investigations has been to furnish the profession with the best and most reliable of all the means at our command for applying solid lunar caustic to the mucous lining of the uterus. Other methods which have been suggested and employed are these: the use of Lallemand's porte-caustique; leaving a pellet of nitrate of silver in the uterine cavity to dissolve; carrying up a small piece held in a delicate wire casing, etc.; but none of these compare with Dr. Lente's,

which is thus practised. A probe, somewhat similar to the ordinary uterine probe, is warmed and then dipped in a little platinum cup that contains nitrate of silver which has been fused over a spirit-lamp. Removing the probe after dipping it, and waving it for a few seconds, a film of the nitrate will be found to have covered its tip. It may then be again dipped, and the process repeated until a sufficiently large pellet is made to cover the end of the instrument. Figs. 115 and 116 represent the probe and cup.

FIG. 115.



Lente's silver caustic probe.

FIG. 116.



Lente's cup for fusing nitrate of silver.

The cervical canal having been cleansed of mucus, and its direction learned by the ordinary probe, Lente's probe is passed up and rubbed against every part of its investing membrane, and dipped as carefully as possible into its convolutions before removal.

After such an application, a stream of water should be projected against the cervix, and a pledget of cotton, which has been freely saturated with glycerine, with a bit of thread attached, should be placed against it. By means of the thread this may be removed by the patient in twelve hours.

The walls of the cervical canal may also be thoroughly canterized by the introduction and retention of Braxton Hicks's crayons of sulphate of copper, iron, zinc, or alum cast in a mould of the length and size of the canal. The gelatine crayons of Chamberlain also answer very well. They are introduced into the cervical canal and kept *in situ* by a roll of cotton. The zinc points may be allowed to dissolve, as they give no pain in doing so. Those of iron, alum, and copper should have a thread attached by which the patient may remove them when they cause discomfort.

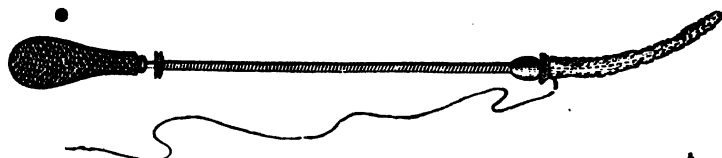
Alteratives in combination with cocoa-butter may be made into suppositories two inches in length, and left in the cervical canal. Into these cervical suppositories may be introduced zinc, copper, iron, lead, or bismuth, with opium, conium, or hyoseyamus.

Fig. 117 represents an instrument, originated by Dr. Sims, which consists of a silver probe surmounted by a slide, by means of which a roll of cotton soaked in any medicated solution may be left within the cervical canal.

Two inches of the probe are wrapped with cotton which is soaked with

the solution selected, and then passed into the cervical canal so as to be engaged within the os internum. The roll of medicated cotton is then slid

FIG. 117.



Silver probe with cotton wrapped around it and thread attached.

off by the slide and retained within the canal, while the probe is withdrawn. In twelve hours the patient makes traction upon the thread attached to the cotton and it is removed.

Destruction and Ablation of the Diseased Glands.—As every gynecologist must have found out by annoying experience, there are cases of this affection which prove incurable by any and all of these means. They are instances not of granular disease, but of aggravated inflammation of the mucous follicles. It is in these cases that a long, glairy, and extremely tenacious plug of mucus is seen hanging from the os externum, which it is often found almost impossible to remove completely. Month after month they tax the ingenuity and perseverance of the practitioner, and at the end of his efforts they seem as aggravated in character as they were before. Under these circumstances but one resource remains, that is to fulfil the indication which is so often elsewhere adopted in surgery, to destroy or remove the habitat of a disease which is not susceptible of cure. This has been done by some, by the use of potassa fusa and the actual cautery, but against both I would strongly advise, for they produce a great deal of subsequent cicatricial contraction. Dr. John Byrne informs me that he introduces with good effect an electrode of the galvanic cautery, which fits the canal, to the os internum, and then by establishing a current makes it white hot. I know nothing of the plan personally.

One of the best chemical agents for destroying the glands is fuming nitric acid. This should be carefully applied to the canal by means of a film of cotton wrapped around the silver probe, after the canal has been thoroughly cleansed. After its use, a stream of cold water should be thrown by the syringe against the cervix, and a wad of cotton saturated with glycerine applied. In ten days or a fortnight a slough of the cervical mucous membrane will take place, after which the surface should be painted over twice a week with a solution of nitrate of silver \mathfrak{Dj} to water \mathfrak{zj} .

Another good caustic is a saturated solution of chromic acid, which, though not nearly as powerful as the nitric acid, answers very well.

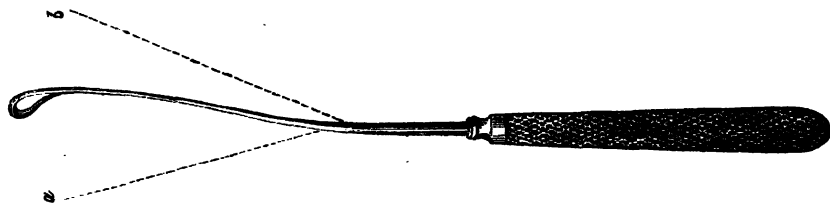
These are the only agents which I would recommend for this purpose. Nitrate of silver is not sufficiently powerful, and potassa fusa and the actual cautery are too destructive in their results.

In alluding to these cases Dr. West¹ says: "I am disposed to think, however, that in the most obstinate cases it may be expedient to adopt a suggestion of M. Huguier, of which I have but small experience, though I have followed it with benefit on two or three occasions. He is accustomed to scarify the interior of the cervical canal with a small, curved, narrow-bladed, blunt-pointed bistoury before introducing the caustic. The previous scarification exposes the more deep seated follicles, which would otherwise altogether escape the action of the remedy; and, while M. Huguier states that he has never known any mischief follow this proceeding, he has by its repetition two or three times effected the cure of cases that resisted every other mode of treatment."

In these very obstinate cases I have repeatedly resorted to a surgical procedure which accomplishes the removal of these glands, and which I have never seen followed by subsequent contraction or inflammation.

This consists in the application of the cutting steel curette, represented in Fig. 118, so forcibly as to remove the arbor vitæ and mucous glands

FIG. 118.



Sims's curette, representing the angles at which it may be bent.

from the os internum to the os externum. Sometimes a second operation in two or three weeks after the first has been necessary, and sometimes even a third. By this means I have succeeded in curing some most obstinate cases which had resisted cure by all other means except the destructive caustics to which I have alluded. The use of this method should be looked upon as an operation, and the patient guarded just as carefully against inflammation as she would be after section of the neck or any kindred procedure. I am fully aware that there are many who will at once characterize this procedure as harsh and unnecessary, but as I feel certain that it is neither, and as I have had experience enough with it to know that it meets the requirements of a class of cases which are incurable by other means, I strongly press its claims to a fair trial. This operation is not parallel with the application of the curette to the body of the uterus for vegetations. It consists in what is equivalent to amputation of the glands, and is the counterpart of removal of the follicular surfaces of the tonsils when chronic inflammation of the follicles proves incurable. Extended experience with it in these otherwise intractable cases leads me to preserve my appreciation of its value.

¹ West, *op. cit.*

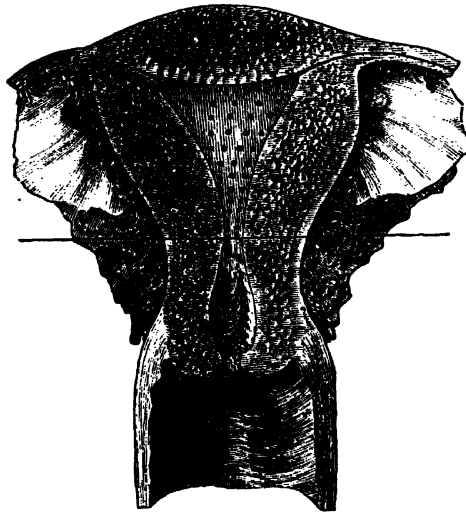
CHAPTER XIX.

CHRONIC CORPOREAL ENDOMETRITIS.

LIKE the cervix, the body of the uterus is liable to chronic inflammation confined to its lining mucous membrane. This receives the name of chronic corporeal endometritis.

Synonyms.—This disease has been described under the names of endometritis, uterine catarrh, uterine leucorrhœa, and internal metritis. The precise seat of the affection is pointed out by the dots in Fig. 119.

FIG. 119.



The dots show the site of corporeal endometritis.

Frequency.—Few points in uterine pathology have created more discussion of late years than this. Some excellent authorities, following the lead of Dr. Henry Bennet, regard it as of rare occurrence, while a large majority consider it quite common. "Internal metritis," says Aran, "is more frequent, nevertheless, in spite of all that has been said to the contrary, in the cavity of the body than in the cavity of the neck of the womb;" and this opinion is concurred in by Dr. West and others. To show how unsettled this point is in the present state of pathology, let me

¹ Mal. de l'Utérus, p. 408.

contrast with this statement that of Prof. Byford,¹ of Chicago, in his excellent work on Medical and Surgical Treatment of Women: "Inflammation limited to the cavity of the body of the uterus is not common, but I am quite sure that I have met with at least two instances." While Dr. Byford's experience furnishes him but two instances, Dr. Tilt gives the statistics of fifty cases of which he has kept notes, and Klob declares the disease to be quite common.

The more industriously the student of gynecology interrogates the literature of this subject, the more unsettled are his conclusions likely to be, and unfortunately his own investigations, however carefully conducted, will often fail to enlighten him in the individual cases with which he meets, for the differential diagnosis between cervical and corporeal endometritis is often very difficult. My own opinions upon this important point I shall state freely, unbiassed by those of authors for whom I entertain the highest respect, but whose conclusions conflict with what I have carefully observed at the bedside.

The most frequent locality of uterine inflammation is that portion of the uterus below a line running across it through the os internum. The portion of the organ above this line, however, is much more commonly affected by inflammatory disease than is stated by Dr. Bennet. During eighteen months I met, in private practice alone, nine well-marked and unquestionable cases, and with several more in which I could not satisfy myself as to the exact limit of the disease. The lining membrane of body and cervix may be simultaneously affected, but this is the exception and not the rule; generally we find one or other portion of the organ the seat of disease. In making this last assertion I am fully aware of its importance, and of the fact that it will be dissented from by a great many. But feeling convinced, as I do, that upon its non-recognition depends a certain amount of the obscurity attending the differentiation of disease of the neck and body, I wish to fix the attention of the reader upon it.

Anatomy.—If the mucous membrane of the uterus be examined with a lens, it will be seen to be studded with minute openings somewhat similar to the mouths of the glands of Lieberkühn in the intestines. These are the mouths of long, curling follicles, which project by their closed extremities downwards towards the parenchyma of the organ. They are lined by delicate epithelium, their lining membrane consisting merely of involutions of that of the uterus. These glands are of two kinds: the simple, which are unbranched tubes; and the compound, which have several branches. Besides these glands there are intermixed with them mucous crypts, which sometimes become distended so as to form the so-called "channel polypus."

Between these glands ramify numerous capillaries, which dip down and

¹ Op. cit., p. 182.

form a network about their mouths so superficial that they are sometimes seen by a strong glass completely uncovered, and even projecting like villi into the cavity.

Pathology.—Corporeal endometritis is, like the same affection in the cervix, a glandular disease. The utricular follicles are the seat of disorder, and it is to the exaggeration of their secretory function that is due the uterine leucorrhœa which constitutes one of its prominent symptoms.

The post-mortem appearances of the mucous membrane are these: it is found to be swollen, soft, pale, and smooth, or covered over with granulations. In cases which have lasted very long, the utricular glands are in great numbers obliterated, or, atrophy having taken place at their mouths only, their secretions are retained, and they are distended into cysts. In time the mucous membrane is replaced by a thin layer of connective tissue, which is covered not by cylindrical or ciliated epithelium, but by what resembles that of basement character. At times small mucous polypi are found in the cavity, while at others, a closure of the os internum uteri having been effected by adhesion, hydrometra exists.

I have had three opportunities for examining post mortem into the pathology of this disease. Two of these cases were presented to the Obstetrical Society of this city. In these instances the condition described by Scanzoni was most evident. The uterine cavity was found considerably enlarged, its walls diminished in thickness, and in one instance they were pronounced by Dr. J. B. Reynolds, after microscopical examination, to be in a state of fatty degeneration. The uterine neck was in every case found healthy both as to parenchymatous and mucous structure, and the enlarged body displaced by anterior or posterior flexure. The mucous lining of the body was in two cases quite smooth, and to a great extent deprived of epithelium; while in the third it was roughened, and presented points where the enlarged bloodvessels created a number of reddish spots. But enlargement of the uterine cavity is not always present; it marks chronic cases, and will not be recognized in those of recent origin. It is highly probable, too, that in cases of recent origin the pathological appearances which have been here described would not be found to exist, but in place of them a thickened, congested, and florid appearance would present itself.

Prognosis.—The prognosis of chronic inflammation of the uterine body is always grave with reference to cure. Even if the case be not of very serious character, and have lasted only a short time, the possibility of rapid recovery is doubtful, while, if it have continued for a number of years, it will often prove incurable. Scanzoni¹ says, with a candor which does him honor: "As for ourselves we do not remember a single case where we have been able to cure an abundant uterine leucorrhœa of several years' standing." In most cases a certain amount of amelioration may be

¹ Scanzoni, Diseases of Females, Am. ed., p. 202.

effected even when they are of long standing ; in a certain number treated early, cure may unquestionably be accomplished ; while in a great many, nothing whatever, either in the way of cure or of relief, can be obtained, and the patient, after passing from physician to physician, settles down into a careful mode of life, resolved to cease treatment and bear as best she may an evil which she has learned to regard as incurable.

The symptoms of a favorable and unfavorable case of corporeal endometritis may be thus contrasted :—

PROGNOSIS IS FAVORABLE WHEN	PROGNOSIS IS UNFAVORABLE WHEN
The case is of recent standing ;	The case is of long standing ;
The discharge is of mucus or blood ;	The discharge is purulent ;
Dysmenorrhœal shreds are not cast off ;	Dysmenorrhœal shreds are cast off ;
Patient naturally of strong constitution ;	Patient naturally of feeble constitution ;
Connective tissue is not affected ;	Connective tissue is affected ;
Dimensions of cavity are not increased ;	Dimensions of cavity are decidedly increased ;
Nervous system is not involved ;	Nervous system is involved ;
Patient near menopause.	Patient not near menopause.

Predisposing Causes.—It has been noticed most frequently to have developed itself in women showing a tendency to the following conditions :—

- Scrofula ;
- Tuberculosis ;
- Spanæmia ;
- Exhaustion from parturition ;
- Exhaustion from lactation ;
- Great and prolonged nervous depression.

Exciting Causes.—These may be enumerated as follows :—

- Exposure during menstruation ;
- Sudden checking of the menstrual flow ;
- Obstruction to escape of menstrual blood ;
- Abortion and parturition ;
- Cervical endometritis ;
- Acute endometritis, puerperal or not ;
- Subinvolution ;
- Displacements causing great congestion ;
- Chronic pelvic peritonitis ;
- Abuse of sexual intercourse ;
- Injury from sounds or intra-uterine pessaries, and injuries resulting from attempts to produce abortion ;
- Certain hemic conditions, as those accompanying phthisis and the exanthematous diseases ;
- Tumors in the uterine cavity or walls ;
- Vaginitis, specific or simple.

It is quite clear how either of the first two causes, in checking hemorrhage from the congested mucous lining of the uterine body, may at once induce the first stage of the disease. They generally result in the acute variety, which passes off rapidly, but which sometimes ends in the chronic form.

Obstruction to escape of menstrual blood is a very fruitful source of the affection. The menstrual blood, if it pour at once into the vagina, remains fluid from admixture of an acid mucus secreted by the lining membrane of that canal; but if it be imprisoned in the uterine cavity, where only an alkaline mucus exists, it very soon becomes clotted. These clots are too large to pass through a cervix of normal dimensions, and, of course, cannot escape from one unnaturally constricted. Their presence in the uterine cavity, together with that of blood which they imprison, in time excites contraction, by which they are expelled. This repeated dilatation and contraction cannot last long without exciting inflammation in the mucous membrane of the uterus. Such an obstruction may have as its cause a small polypus which acts as a ball valve at the os internum, congenital or acquired narrowness of the cervical canal, or uterine flexion.

The parturient process is a very frequent source of the disease, especially where the undeveloped placenta is prematurely separated from its uterine connection. Where, in a prolonged labor, the early evacuation of the liquor amnii leaves the irregular outline of the body of the child pressing against the uterine investment for many hours, such a sequel might result.

Of cervical inflammation as an exciting cause Dr. Bennet¹ thus expresses himself: "It" (corporeal endometritis) "appears, however, to be generally met with in practice as the result of the lengthened existence of inflammatory disease of the cervix and its cavities. The inflammation gradually progresses along the cavity of the cervix until it reaches the os internum, and passes into the uterus." I have already stated my dissent from this view, although, at the same time, I admit that it may be correct.

Acute endometritis may, instead of subsiding entirely, very naturally run into this disease.

Subinvolution of the uterus keeps up a constant tendency to hyperæmia of the parenchyma which affects the mucous membrane. As a complication of this condition corporeal endometritis is more commonly observed than as a consequence of all the other causes combined.

Pelvic peritonitis disturbs the position, the innervation, and the circulation of the uterus, and proves a fruitful source of endometritis.

The effect of sexual intercourse as a causative influence is frequently observed soon after marriage, the first connubial approaches exciting

¹ Op. cit., p. 75.

uterine congestion with greater or less intensity. Dr. Tilt¹ remarks with reference to it: "It is useless to disguise the fact, connection has a downright poisonous influence on the generative organs of some women." I cannot believe that the Almighty has ordained a function as essential to the perpetuation of our species which has a downright poisonous influence on the generative organs of a healthy woman. And yet, to a certain extent, the statement is correct, for upon a woman who has enfeebled her system by habits of indolence and luxury, pressed her uterus entirely out of its normal place, and perhaps goes to the nuptial bed with some lurking uterine disorder, the result of imprudence at menstrual epochs, sexual intercourse has indeed such an influence. The taking of food into the stomach exerts no injurious influence on the digestive system, but the taking of food by a dyspeptic who has abused and injured the organ may do so.

Injuries from sounds, etc., act so evidently in exciting inflammation as to need only mention.

Certain conditions of the blood sometimes produce acute corporeal endometritis, which, as already stated, may pass into the form under consideration. As a complication of the exanthematous diseases, endometritis is well known, and its occurrence with phthisis has been noted by Dr. Gardner in the American edition of Scanzoni. Every practitioner must have noticed it in connection with that affection.

Tumors in the cavity or walls of the uterus very generally produce this disease in consequence of the congestion of the mucous membrane which they cause.

Vaginitis of non-specific character may, and of specific form often does, pass by continuity of structure into the neck and body of the uterus. The latter has in these cases in my experience not only affected the body, but the Fallopian tubes, resulting in peritonitis.

Symptoms.—The symptomatology of corporeal endometritis constitutes one of the most unsatisfactory and obscure subjects in the entire field of gynecology. At times its symptoms are so slight and at others so masked and obscure, that the disease often runs a lengthy course without exciting the suspicions of either physician or patient. Its effects upon the constitution also differ most unaccountably in different cases. Sometimes the disease will continue for ten, fifteen, or twenty years, producing profuse leucorrhœa, menstrual disorders, and nervous derangement, and yet result in no annoyance so grave as to cause the patient to seek medical aid. At others it accompanies or excites areolar hyperplasia, which induces displacement and causes pain on locomotion, sexual intercourse, and the passage of feces through the rectum; or results in an ichorous discharge, which creates the annoying symptoms of vaginitis, cystitis, or pruritus

¹ Op. cit., p. 234.

vulvæ. The chief symptoms which usually present themselves in a case of mucous inflammation of the uterine body are—

- Leucorrhœa ;
- Menstrual disorders ;
- Pain in the back, groins, and hypogastrium ;
- Nervous disorders ;
- Tympanites ;
- Symptoms of pregnancy ;
- Sterility.

Profuse leucorrhœa of glairy character is one of the chief signs of the affection. This when very tenacious and thick is the product of the cervical glands, but the lining membrane of the uterus likewise secretes a similar fluid, differing from it chiefly in possessing the qualities mentioned in a very much less marked degree. But uterine leucorrhœa differs from cervical in other particulars ; it is often more or less mixed with blood so as to have a rust-colored appearance, especially for a fortnight after menstruation. This, Dr. Bennet¹ looks upon as being “as characteristic of internal metritis as the rust-colored expectoration is of pneumonia.” It is a reliable and valuable, though by no means a universal, sign. Sometimes the menstrual discharge is regarded by the patient as greatly prolonged, when in reality it is this blood-stained leucorrhœa which follows the process of menstruation, that gives rise to the belief. In some instances the discharge is milky, and at others, and these are the most rebellious cases, perfectly purulent. There is a variety of corporeal endometritis which occurs in old women who have long ceased to menstruate, in which a watery or creamy pus is secreted. These cases are often accompanied by the most wearing and harassing pruritus vulvæ.

Menstrual disorders are rarely absent. The discharge is sometimes too profuse, even lasting throughout the month and constituting menorrhagia, or it is very scanty, and shows a marked tendency to cessation.

Where the connective tissue is entirely unaffected, menorrhagia may occur without pain, but this is not common, for that tissue is often simultaneously involved and dysmenorrhœa coexists. Sometimes in these cases, an exfoliation of the entire lining membrane of the cavity of the uterine body occurs at the menstrual periods. This has received the name of the dysmenorrhœal membrane, and is by some regarded as an evidence of chronic corporeal endometritis.

Pain in the back, groins, and hypogastrium is generally present, and at times a burning sensation over the symphysis pubis proves a source of great discomfort.

Nervous symptoms of greater or less severity generally show themselves before the disease has lasted long. The patient complains of neuralgic

¹ Op. cit., p. 76.

headache, especially over the crown, hysterical symptoms, with sadness, tendency to weep, and a feeling of intense isolation and incapacity for any mental effort.

Meteorism is a very common symptom, the connection of which with inflammation of the uterine mucous membrane is not, at first glance, clear. It is probably due to disorder of the nervous influences governing peristalsis and giving tone to the intestinal muscular tissue, which proceeds to such an extent as to result in accumulation of gases in the canal. In the same way this affection may induce constipation, which is often one of its most obstinate accompaniments.

Symptoms of pregnancy often exist in connection with the disease, and sometimes mislead the physician. Nausea and vomiting are by no means invariably present, but are valuable signs. They appear to result from this disease as they do from occupation of the uterine cavity by the product of conception. Sometimes, in addition to these, there are darkening of the areolæ of the breasts, and enlargement and sensitiveness of the mammary glands. When to these are added abdominal enlargement, from tympanites and irregularity of menstruation, it will be perceived how easily an error might be made.

Sterility is so commonly a result of endometritis that it should be considered as one of its signs. Very often it has been the only symptom that has led to an investigation of the state of the uterus which has determined the existence of the disease. The affection does not, however, preclude the possibility of conception; it only diminishes the probability.

Physical Signs.—The physical signs are neither numerous nor reliable. Those of real value only will be mentioned. The uterine probe passed into the cavity will often show the length of the uterus to be greater than it would be in health, and create more discomfort than in a healthy uterus. Upon conjoined manipulation, two fingers being placed in the fornix vaginae, and the fingers of the other hand made to depress the anterior wall of the abdomen, sensitiveness will usually be found in the body of the organ. The recognition of the absence of cervical disease, while at the same time there are profuse uterine leucorrhœa and the other symptoms recorded, will lead us strongly to suspect corporeal endometritis. Lastly, dilatation of the os internum may be taken as a corroborative sign.

Course, Duration, and Termination.—This disorder often lasts for years; in the case of a nulliparous woman confining itself to the mucous membrane; in that of a woman who has borne children gradually exciting congestion and exuberant growth in the subjacent parenchyma. This is the most frequent result exerted upon the parenchyma, but it may be affected in two ways: 1st, a hyperplasia, or excess of nutrition, may occur; 2d, an aplasia, or want of nutrition, may take place, and dilatation and distention eventuate.

Complications.—The most ordinary complications met with are displacement, vaginitis, granular degeneration of the cervix, and pruritus vulvæ.

Treatment.—Special attention should be given to sustaining and improving the general health of the patient, which will often show a marked tendency to depreciation. Good diet, fresh air, systematic exercise, and avoidance of all circumstances calculated to depress the spirits or harass the mind, should be recommended. If practicable, change of air and scene should be brought to our aid, and the patient be sent occasionally to some suitable watering-place or country resort. The healthy condition of the nervous and sanguineous systems will be fostered by these measures, and should medicinal tonics be required, iron, the mineral acids, quinine, the bromide of potassium, or nux vomica may be administered. All rich and highly spiced food should be avoided, and the patient should be guarded against habits of indolence and luxury which tend to exhaust the nervous strength.

The uterus should be placed at rest by removal of pressure upon the fundus by clothing, limitation of marital intercourse, avoidance of violent and intemperate exercise, and if necessary, by a sustaining pessary. Should absolute displacement exist, it should be carefully rectified; should laceration of the cervix exist, it should be repaired; and in case uterine enlargement or subinvolution be present, ergot in small doses should be systematically administered.

Applications to the Uterine Cavity.—Upon theoretical grounds direct applications to the diseased endometrium would hold out a brighter promise of cure in these cases than any other plan of treatment, and during the past quarter of a century it has become the conventional habit to recommend them. In this habit I have shared until closer observation and enlarging experience during the past five years have led me to become sceptical as to the utility of the course. Observation and experience have so changed my own practice that I find myself very rarely resorting at present to applications above the os internum uteri. That they may become necessary in certain cases I do not at all deny; but I maintain that they should not be habitually resorted to: 1st, because they very generally fail in curing the disease; and, 2d, because they are by no means void of danger.

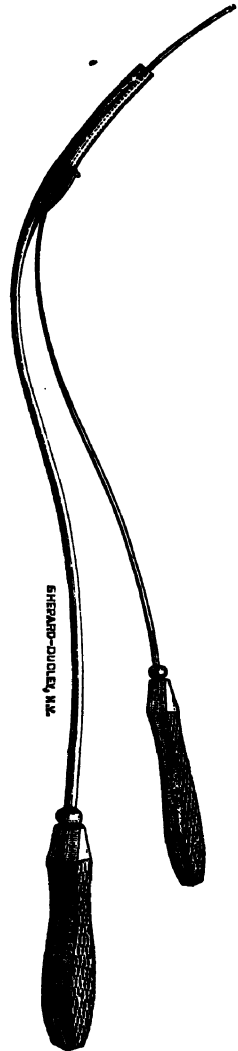
That a certain number of cases of pelvic peritonitis and cellulitis are created by these applications all must admit. In spite of this fact their use would be decidedly indicated were their results very promising. But in my experience their results are not promising, and for this reason I have given up their general use. I shall nevertheless describe the methods by which such applications should be made as fully as possible.

Récamier was the first who had the boldness to cauterize the cavity of the uterus, which he did by means of nitrate of silver in an ordinary

porte-caustique. The practice thus introduced was continued and spread abroad by Robert, Richet, Trousseau, Maisonneuve, and others, and to-day is still commonly resorted to. There are four methods by which it may be practised: 1st, by the use of solutions painted over the surface; 2d, by ointments left to melt in utero; 3d, by injections of fluid into the cavity of the body; 4th, by solid caustics. In commencing treatment the practitioner should see that the cervical canal is well opened, in order to admit the free escape of fluids from the cavity above, and the application of substances through it from below. This perviousness, if it do not exist, should be secured by the use of dilators before the local treatment is proceeded with. If the uterus be found sensitive to vaginal and rectal touch, the patient should remain in bed for some days before the first application is made, the bowels be kept active by mild saline purgatives, and warm baths or hip-baths with copious vaginal injections employed. If the operator use the ordinary long, cylindrical speculum, he will in the majority of cases fail to accomplish the end in view, reaching the fundus uteri, for through such an instrument, it is always difficult to penetrate so high into the cavity. If, however, he uses the Sims speculum, or one of its modifications, or a short, cylindrical instrument, he will succeed without effort or delay. The instrument being introduced and the cervix cleansed by the speculum syringe, the operator very gently passes through the cervical canal a small and delicate cervical speculum. That shown in Fig. 120 is one of the best of its kind.

Having previously wrapped the silver or hard rubber probe with a film of cotton, he now passes this up to the fundus. This removes a good deal of mucus from the cavity which would otherwise have neutralized the caustic introduced. Removing the cotton from the probe, he wraps another piece around it, or, as is better, uses another probe already wrapped, and, dipping this into the fluid caustic which he has determined to use, he passes it directly to the fundus and gently moves it over the surface. This should not be repeated, for the astringent action of the caustic makes repetition difficult, and if properly done the first time it will be unnecessary. After

FIG. 120.



Wyllie's cervical speculum, with probe passing through it.

this the patient should go to bed and remain perfectly quiet, until the next day at least, and if any discomfort exist, for several days.

In place of the cotton-wrapped probe, the painting of the uterine surface may be very thoroughly accomplished by the use of a small brush of pig's-bristles dipped in the solution, and passed through the cervical speculum.

The alteratives which may be thus employed are:—

Solution of chromic acid ʒj to ʒj water;

Solution of nitrate of silver ʒj or ʒss to ʒj of water;

Compound tincture of iodine ʒss to ʒss of glycerine.

Saturated solution of sulphate of zinc;

Saturated solution of sulphate of copper;

U. S. D. solution persulphate or perchloride of iron with equal parts of glycerine.

Solution of chloride of zinc ʒj to ʒj water;

U. S. D. muriate tincture of iron ʒij to ʒj water;

Saturated solution of carbolic acid.

Use of Ointments.—The application of ointments to the lining membrane of the uterus is so inconvenient and disagreeable a process that I cannot recommend it. It possesses no special advantages. It is proceeded with in much the same manner as that of fluids, except that a different instrument is, of course, necessary for their introduction. One which answers the purpose very well is the invention of Dr. F. D. Lente. It consists of a syringe with a silver tube attached. The ointment to be employed is put into the syringe by a spatula, and, the tube being introduced into the uterine cavity, the piston is pushed forward and the ointment is forced out. The following are the ointments which are generally thus employed, though any others—as lead, bismuth, calomel, iodine, etc.—might be substituted:—

R. Argenti nitratis, ʒij;
Belladonnæ ext. ʒj;
Ungt. spermaceti, ʒij.—M.

R. Plumbi acet. ʒij.
Morph. sulphat. gr. iv;
Butyr. cacao, ʒss;
Ol. olivæ, q. s.—M.

The Application of Alteratives of Solid Character to the Endometrium.
—Substances of solid character which will melt under the influence of the heat of the body may be introduced into the uterine cavity in the form of suppositories or pencils. The pencils of zinc, copper, alum, or iron mentioned in the last chapter may be thus employed, or suppositories made with cocoa-butter, or according to Becquerel's formula, may be used instead. Becquerel's formula is the following:—

R. Tannin, 4 parts;
Gum tragacanth, 1 part;
Bread crumb, q. s.

One to be gently pushed into the uterine cavity and allowed to melt, every four days.

Upon first trying an intra-uterine suppository or pencil of a certain strength, I should advise that a thread be always attached to it in order that it may be removed by the patient in case of pain. After testing in this way, the thread may be dispensed with, but, as a preliminary precaution, its necessity is great. Cases are met with in which a few drops of water in the cavity of the uterus will cause pain, and I have seen the cautious introduction of the uterine sound cause violent epileptiform convulsions. Should such a result follow the introduction of a medicated pencil which has slipped out of reach, the position of the introducer would be an unfortunate one.

Injections into the Uterine Cavity.—The subject of intra-uterine injection has often come very prominently before the profession, and been fully and ably discussed. Many eminent authorities have pronounced in its favor, and reported hundreds of cases in which they have employed it with impunity and benefit. In the practices of many it is, indeed, a routine method of treating corporeal endometritis. While the evidence which has been adduced proves that with proper precautions this means of medication is robbed of its chief dangers, it likewise makes it evident that in careless, inexperienced, or unskilful hands it carries with it manifold and serious perils.

This method of treatment is not a new one, as many have appeared to think, but one of the oldest on record. It is certainly a suspicious circumstance that, employed, as it has been at various periods, during 2000 years, it should have, even at our day, as many opponents as it now numbers arrayed against it. It may be suggested that the necessity for allowing escape of the injected fluid has been only recently recognized, and that therefore the safety of the method has been only of late secured; but this is not so, for in 1833, Méliér, of France, employed a double canula constructed on the same principle as that of some to which I shall soon make allusion. In this connection it may not be unprofitable to take a rapid survey of the history of the subject. For most of my facts I am indebted to an exhaustive article by Dr. J. Cohnheim,¹ of Berlin, and translated by the late Dr. Kammerer,² of this city. Intra-uterine injections were employed and advised by Hippocrates, B. C. 400, for the purposes of washing out bits of retained placenta and medicating the surface affected by catarrh. They are likewise advised by Paulus Ægineta, and; as we come down to later times, by Sylvius, Montanus, Ambrose Paré, Bottoni, Roderic a Castro, Mercurialis, Ludovic Mercatus, and Astruc. Otto, a translator of Astruc into German, in a note expresses the opinion that the fluid does not ordinarily penetrate into the uterine cavity, being prevented by the os internum, and says that "he

¹ Beitrage zur Therapie der Chronischen Metritis. Berlin, 1868.

² Amer. Journ. Obstet., vol. i. p. 377.

knows of cases in which the use of the above 'beautiful remedies' was followed by attacks of severe uterine 'colic.' The method was again advised by Wenceslaus, Collingwood, Berends, and Steinburger, and opposed with apparently equal warmth by Frank and Hourmann. The latter author drew attention to the dangers of the method by reporting a case of severe metropéritonitis, which resulted from a simple injection given for leucorrhœa; and immediately following his case three fatal ones were reported, two in Bretonneau's wards and one in Nélaton's. At a still later period they have been recommended by Récamier, Velpeau, Ricord, Kennedy, Retzius, Routh, Sigmund, Matthews Duncan, Tilt, Braun, Martin, Courty, Nott, Kammerer, and others, and been opposed by Oldham, Mayer, Bessems, H. Bennet, Gosselin, Depaul, and others. Cases of violent uterine colic, accompanied by great prostration, feeble and rapid pulse, faintness and coldness of extremities, are repeatedly recorded even by the advocates of the method; and peritonitis, ovaritis, and salpingitis, which have been recovered from, have been met with as results of the practice by Hourmann, Leroy-d'Etiolles, Landsberg, Oldham, Pédelaborde, Retzius, Becquerel, Noeggerath, myself, and others. Fatal cases of peritonitis have occurred to Bretonneau, Nélaton, Gubiau, Noeggerath, Von Haselberg,¹ Jobert,² and others. A case of sudden death from entrance of air into the veins has been met with by Bessems,³ who, in post-mortem examinations, "found air-bubbles in the vena cava and heart." Another case ending thus suddenly is reported by Dr. Warner,⁴ of Boston, as occurring at the Charity Hospital of St. Louis, where "a small quantity of water injected into the uterus occasioned immediately death. This result was evidently from shock." I do not find any statistical records from Dr. Simpson upon the subject, but the general impression left upon his mind concerning the method is thus plainly stated: "But, mark you, never think or dream of throwing liquids into the interior of the uterus by means of any injecting apparatus, for severe and fatal inflammations are very likely to ensue. Such a result may perhaps be caused by the fluid running along one or other patent Fallopian tube, and escaping into the peritoneum; more probably it may be due to laceration of the mucous membrane and entrance of the fluid into one of the uterine veins; but however it may be produced, the consequences of injecting fluid into the cavity of the womb are so often dangerous and deadly, that the practice has now been given up, I believe, by all accoucheurs." In this passage he alludes to injections into the non-puerperal uterus for dysmenorrhœa. Becquerel⁵ reports the practice as applied to

¹ Amer. Journ. Med. Sci., April, 1870, p. 566.

² Bennet on the Uterus, p. 287.

³ N. Y. Journ. Obstet., vol. i. p. 394.

⁴ Boston Gynecological Journal, vol. ii. p. 286.

⁵ Dis. of Women, Am. ed., p. 110.

⁶ Mal. de l'Utérus.

six cases of uterine catarrh. "In one case only, the catarrh was diminished; of the remaining five, three could be saved only by energetic antiphlogistic treatment, the effects of the injection being exceedingly severe." Noeggerath reports four cases treated by injections; in the first case, cure was happily effected; in the second, cure was accomplished, but serious and protracted symptoms followed; in the third case, metroperitonitis was set up, but controlled; and in the fourth case the patient died.

There are two considerations in connection with this subject which must not be lost sight of. One of them is thus stated by Dr. Henry Bennet: "This accident" [fatal peritonitis, due, as he thought, to passage of fluid through the Fallopian tubes], "would probably have occurred much oftener than it has done in the hands of French practitioners, were it not that the natural coarctation of the os internum must have generally prevented the fluid injected from penetrating into the *uterine cavity*." The other is this, that many cases of peritonitis, some fatal and others not so, which have been due to it have not been reported. One of the former and two of the latter have come to my own knowledge.

The explanation formerly given of the accidents which may follow this procedure, was very naturally the penetration of fluid through the Fallopian tubes into the peritoneum. But, although this does occasionally occur (see Von Haselberg's case as an example), it has been proved by experiment upon the dead body, as well as by observation of the practice upon the living, that there is a resistance on the part of the tubes which ordinarily prevents it. Experiments to test this matter have been carefully conducted by Vidal, Klemm, and Hennig, and all with the same result. It is probable that entrance is resisted successfully by tubes which are healthy, but that dilatation and atony from salpingitis would render the patient liable to the accident.

The deduction which the evidence elicited forces upon us is self-evident, namely, that at the same time that this method of treatment systematically and carefully resorted to is a valuable resource in endometritis, it is attended by many and great dangers. While it is proved that with certain precautions, and in the hands of one skilled in manipulations of this character, intra-uterine injections may usually be employed with safety and profit, it is equally manifest that a certain number of deaths have been due to them, and that they are frequently followed by excessive pain and grave constitutional symptoms when the essential precautions are neglected. I should strongly recommend the general practitioner who is unfamiliar with the treatment of uterine disorders to avoid their use entirely, except in cases of uncontrollable hemorrhage, in which the cervix is well dilated and no flexure of the uterus exists. When he is induced to essay this plan in the treatment of corporeal endometritis, let him bear

in mind that the possibility of easy escape of the fluid injected is not an advantage merely, but an essential for safety.

One very recent advocate of intra-uterine injections with a great deal of naïveté makes the following statement :—¹

“Though most frequently women do not suffer any pain when injections, even of a strong solution of caustic, are made into the womb, yet it sometimes happens that symptoms which give great alarm to inexperienced persons do occur. The patient suddenly cries out, complains of violent colics, of pain in the womb like that of labor; the abdomen becomes swollen, the face becomes pale, the extremities cold, the pulse small, and the patient is thrown into a state of great depression. These symptoms are sometimes accompanied with great trembling of the limbs and vomiting.

“I have related a case of this kind at the end of this memoir. Such a train of symptoms is undoubtedly alarming in appearance, but is not followed by any fatal result.”

I confess to sharing the feelings of those inexperienced persons who are greatly alarmed at the development of “such a train of symptoms,” for that it is alarming not only in appearance, has been more than abundantly proved by the occurrence of death in a number of cases.

The experiments of Vidal, Hennig, and Klemm force us to admit that passage of fluid through the Fallopian tubes is not as likely an occurrence from intra-uterine injections as one would suppose it would be from theoretical reasoning. Cohnheim, to whose admirable *résumé* of this subject I am so much indebted, appears to regard them as conclusive. To my mind they are very far from being so. It is important to note that experiments performed on the cadaver are usually applied to healthy uteri and undilated tubes, while the gynecologist employs these injections in cases where the endometrial mucous membrane is inflamed, and the Fallopian tubes very often dilated in consequence. Is it not likely that a disease which overcomes the sphincteric action of the os internum uteri would likewise have a similar effect upon that of the metro-salpingian orifices? Post-mortem examination proves this to be the case. Then there are a number of cases on record in which such *immediate* inflammatory results followed in the peritoneum, that there can be little doubt as to the occasional relation as cause and effect. Take for example the report of a case by Pédelaborde, in *L'Union Médicale* for 1850, in which, “three minutes after an injection of a decoction of walnut leaves, severe uterine pains ensued, and in a few hours were followed by acute peritonitis.” A similar instance occurred to myself from injection of solution of persulphate of iron. Lastly, in a fatal case occurring to Von Haselberg, the metal iron was detected by chemical tests in one tube. If in a uterus free from disease, whether in the cadaver or the living subject, a syringe be carried up

¹ Gantillon on Uterine Catarrh, pamphlet, 1871.

to, but not through, the os internum, and an injection made, the fluid will not enter the cavity of the body—and why? Because corporeal endometritis has not destroyed sphincteric action at the os internum. But in cases of endometritis, where that action is destroyed, a paralyzation having been effected there by disease, how different is the case! Under such circumstances patients are often unable to use vaginal injections, for the reason that the fluid at once passes into the cavity of the body, and produces violent uterine colic.

These cases are, I claim, precisely parallel, and ignoring the fact upon which I have here laid so much stress is not only invalidating experiments made to throw light on a point of clinical importance; it is absolutely perverting them to the production of evil.

The medicinal substances which have been thus employed have varied very much with the views of different practitioners. Velpeau employed concentrated solutions of nitrate of silver; Ricord from two to three parts of tincture of iodine to one hundred parts of water; Every Kennedy twenty to thirty drops of nitrate of mercury; while Sigmund resorts to solutions consisting of half a drachm of nitrate of silver, one drachm of sulphate of copper, one drachm of iodide of potassium with nine grains of iodine, two drachms of chloride of zinc, or three drachms of perchloride of iron, to three ounces of water. Hennig employs pure warm water for a time, then water slightly tintured with iodine, and lastly, pure tincture of iodine or solutions of silver; Fürst, one drachm of nitrate of silver to two of water; Martin, of Berlin, five grains of aluminate or sulphate of copper to six ounces of distilled water; and Kammerer used ten to twenty drops of concentrated solution of chromic acid; Lugol's solution of iodine and iodide of potassium, or pyroligneous acid, in weak solution; or ten grains of sulphate of zinc to one ounce of water.

Before leaving this subject I will embody in a series of propositions the most important facts connected with it.

1. Intra-uterine injections may produce death even when simple and unirritating fluids are employed, by peritonitis due to absorption of the fluid and subsequent phlebitis; passage of fluid into the peritoneum; endometritis(?); or by sudden entrance of air into a vein.

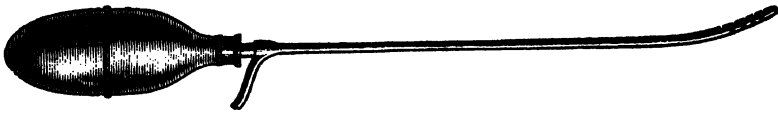
2. Even when no such dire result takes place, they may set up severe uterine colic, with tendency to collapse, from hysterical neuralgia, violent uterine contractions like "after-pains," or intense irritation of uterine and tubal mucous membrane.

3. These dangers may be to a great extent avoided by attention to certain rules, which here follow:—

- a. Never inject the uterine cavity except with the certainty that the injected fluid can rapidly escape. Therefore always, unless the os internum be very much dilated, precede the injection by use of a tent, and always use a syringe insuring immediate reflux. The method for employ-

ing uterine injections is very simple, but should always be practised with great system and caution. A single tube of silver or elastic material like a catheter, with eyes at the side, may be used, provided the little syringe which projects the fluid be immediately removable so that the means of ingress may at once become the means of egress. We may, however, still more certainly insure egress by another instrument. The necessity for return of the injected fluid is so great that canulæ with double canals or a canal and gutter have been constructed with especial reference to this. One of the most effectual and safest of these is the instrument shown in Fig. 121.

FIG. 121.



Molesworth's double canula and bulb syringe for injecting the uterine cavity.

When the India-rubber bulb is squeezed, the fluid which it contains escapes from holes in the end of the canula, and at once returns through another tube which lies alongside of it. Then, as the compression of the bulb ceases, a vacuum is created which sucks back every superfluous drop.

b. The best substances for injection are tincture of iodine, nitrate of silver, sulphate of soda, pyroligneous acid, carbolic acid, and sulphates of zinc, copper, or iron in weak solution. It is best always to begin with the use of weak alkaline injections of warm water, not only to see how tolerant the uterus will prove to the process, but because in the experiments of Klemm on the cadaver, in three out of eighteen cases, blue ink injected through a narrow os with moderate force penetrated the venous system of the uterus and broad ligaments without apparent laceration. After tolerance has been tested, stronger solutions may be used.

c. Always use solutions at a temperature of at least 85° to 90° .

d. Wash out the cavity with warm fluid before using the stronger application; and in injecting always be sure that there is no air in the syringe, and never eject the fluid which it contains with force.

e. Never employ this method in a sharply flexed uterus before replacement, never just before or after a menstrual period, and never when pelvic peritonitis or periuterine cellulitis has recently existed.

f. After the use of this plan let the patient lie down until all sense of discomfort has passed, and confine her to bed and give opium freely on the first appearance of pain.

4. In uterine colic the most certain and immediate relief will follow the use of morphia by the hypodermic syringe. Astruc advised the addition of narcotics to injected solutions for the prevention of the accident.

5. Lastly, although this plan of treatment, robbed of many of its dangers by the precautionary measures here advised, may be comparatively safe in the hands of specialists skilled in uterine manipulations, it will always remain a hazardous method for the general practitioner who lacks such skill and who employs instruments not entirely suited to the purpose.

It may now be asked, since I oppose the habitual practice of carrying applications above the os internum uteri as well as that of injecting the uterine cavity, what course I do advise and adopt in the management of this affection. As I have already stated, I would recommend careful attention to the general state, removal of displacements, cure of laceration of the cervix, extirpation if possible of any existing neoplasm, and, if uterine enlargement exist, the free use of ergot. To favor the free escape of mucus from the uterine cavity I would see that the cervical canal be dilated. And now if improvement did not occur I would apply the dull wire curette freely over the whole surface. In speaking of the pathology of corporeal endometritis, it was stated that the diseased membrane in time develops upon its surface fungoid granulations, mucous cysts, and mucous polypi. These secondary conditions often result in metrorrhagia or menorrhagia. Not only does the gentle application of the little wire curette without cutting edge accomplish the removal of these, it produces, when thoroughly applied, an altered state in the entire endometrial membrane, breaks distended bloodvessels, and often accomplishes a great deal for the relief of the disease. In cases of endometritis engrafted upon subinvolution and accompanied by hemorrhage, it is especially applicable. But its beneficial results depend, I feel sure, upon the fracture of tortuous and distended bloodvessels, and it is chiefly for this purpose that I use it.

The use of the dull wire curette does a greater amount of good in these cases at the expense of less risk than the applications just mentioned, and I infinitely prefer it.

CHAPTER XX.

AREOLAR HYPERPLASIA OF THE UTERUS—THE SO-CALLED CHRONIC PARENCHYMATOUS METRITIS.

Definition and Nomenclature.—One of the most common pathological combinations which confronts the gynecologist is that which I here endeavor in as concise a manner as possible to picture. A patient calls upon

him for relief of backache; pelvic pains; dragging sensation about the loins; "bearing-down pains;" leucorrhœa; menstrual disorder, tending chiefly to excessive flow; throbbing sensation about the uterus; general feeling of despondency; malaise and weakness; and irritability about the bladder and rectum. All these rational signs pointing to the uterus as the probably delinquent organ, a physical exploration is made, and furnishes the following results: the uterus is usually discovered to be in the condition of descent, retroflexion, or antelexion; it is voluminous, tender to the touch, and evidently engorged with blood; from the cervical canal a leucorrhœal matter pours; the probe carried to the fundus finds it tender, and creates the flow of a little blood; the cervix is often in a condition of granular or cystic degeneration; and a low grade of vaginitis exists.

To this pathological combination the more superficial diagnostician will often apply a name which announces one only of the existing conditions; as, for example, uterine catarrh, ulceration of the cervix, or retroversion or prolapse. The more reflective and intelligent examiner will ordinarily group the coincident morbid states together under the name of "chronic metritis."

The latter would be fully sustained in his position by authority as abundant as it is orthodox, for by systematic writers, since the days of Récamier, this uterine state has been described as one of "chronic parenchymatous metritis." Only within a very recent period have the pathologists of the German school begun to question the validity of this conclusion, which, taking its origin in France, was spread through England and America chiefly by the writings of Dr. Henry Bennet. According to this view the following pathological changes were believed to be those resulting in the condition just described. In the first stage the parenchyma was regarded as gorged with blood, a state of active congestion existing. This was supposed soon to pass into the second stage, consisting in an effusion of lymph, when, unlike a similar process in other parts, the morbid action ceased, or rather did not advance, and unless relieved by treatment, continued stationary for a length of time. The third stage of inflammation in other parts, that of suppuration, was admitted to occur rarely here, or in the parenchyma of the body, but in time all inflammatory action ceasing, the cervix remained large and indurated without sensitiveness, or the effused lymph might be absorbed, and great diminution in size occur with induration. Were this really the case the condition would constitute one of inflammation, even if we restricted ourselves in the use of that ambiguous term to the narrow and precise limits prescribed by Dr. J. Hughes Bennett, when he says, "It should be applied only to that perverted alteration of the vascular tissues, which produces an exudation of the liquor sanguinis; it is this exudation alone which can be held to unequivocally characterize an inflammation."

Examined more recently, however, by the more certain and less theoretical processes of modern science, all this has come to be looked upon as erroneous. Cases which were formerly regarded as instances of inflammation on account of the existence of enlargement, congestion, and tenderness upon pressure, the microscope now proves to have been instances of excessive growth of the connective tissue of the uterus, with congestion, and resulting hyperæsthesia of its nerves.

It may result from three entirely different pathological states : first, from interference with retrograde metamorphosis of the puerperal uterus from any cause; second, from congestion long kept up by mechanical causes, such as displacement; third, from a formative irritation or state of hypernutrition excited by endometritis, or the existence of fibrous tumors. Whatever be the originating pathological condition, that which results and which we are now considering consists in hyperplasia of connective tissue as its most marked feature, and of congestion and nervous hyperæsthesia as important accompaniments.

It is true that some progressive writers still cling to the name chronic inflammation, and apply it to hyperæmia resulting in hypergenesis or hypertrophy of connective tissue, but this is by no means the signification which is ordinarily given to the term. Indeed, with reference to the uterus, so vague and unsatisfactory is the appellation chronic metritis, that there is no knowing what idea one who uses it really intends to convey. He who has in the library and at the bedside been perplexed and disheartened by the constantly recurring uncertainty which it has induced, will have learned to appreciate the feeling which prompted two eminent pathologists, Andral and J. Hughes Bennett, to propose that the vague term "inflammation" should be expunged from our nomenclature. To quote the words of an accomplished writer of this city:—

"The entity inflammation, fallen from its high and palmy state, is hanging by its eyelids as a pathogenic factor in most of the organs of the body; its last resting place seems to be the womb, and here still it has a good foothold. Why should uterine pathology alone be cumbered by an outworn theory?"

It is not an entirely correct statement that this pathological doctrine originated in France. Upon the revival of gynecology in that country by the labors of Récamier, it likewise revived and assumed important proportions. But the theory of parenchymatous inflammation as explaining this condition is as old as the science of medicine itself, and it certainly is a peculiar commentary upon it, that now, in the most advanced period that the science has ever known, the retention of it not only results in doubt, uncertainty, and scepticism, but absolutely creates controversial discussion, and forms sects and factions, where all should be united for the common good. "All must mourn," remarked the late Professor Hodge, "over a discrepancy of opinion which bears so directly on the treatment

of such painful and distressing maladies." "We cannot but believe," says Meredith Clymer, "that the time is not far off when this vexed but important question will be re-opened, and examined in a fair-judging, and not peremptory and dogmatic spirit, uninfluenced by prejudice, prescription, or tradition; and that, measured by a new standard, and settled by the requirements of a more enlightened knowledge of the laws of life, present differences will be reconciled, hostile opinions conciliated, and the angry voice of adverse factions be heard 'not any more forever.'"

Everywhere throughout the recent and progressive literature of gynecology, the foreshadowing of the advancing change in views with regard to this subject will be recognized. The pendulum, swung too far by the hand of Dr. Henry Bennet, is making its inevitable return. That it may stop on safe middle ground must be the hope of all. "The determination of blood to a part here noticed, characterized by dilatation of the arteries, with increased flow of blood through the capillaries, must be distinguished from the congestion of inflammation, characterized by the accumulation and stagnation of red and white corpuscles in the vessels, tending to be abnormally adherent to each other and to the vessels," says Dr. H. G. Wright,¹ quoting from Dr. Aitken. "Tested by this standard," that of Dr. J. Hughes Bennett, already quoted, says Dr. Graily Hewitt,² "the uterus is certainly very little liable to 'inflammation;' exudation, and transformations of such exudations, purulent and otherwise, similar to what may be witnessed in other organs of the body, being very rarely witnessed in the parenchyma of the uterus. The morbid processes with which we are familiar as affecting the tissues of the uterus are for the most part alterations of growth, irregularities in growth, slight modifications, in fact, of the processes which follow each other in due succession in the natural condition of things. The word 'inflammation,' used in Dr. J. Hughes Bennett's sense of the word, certainly fails to convey an adequate idea of the modifications observed under such circumstances." "Diffuse growth of connective tissue," says Klob,³ "constitutes the so-called induration, hitherto considered as a result of parenchymatous inflammation of the uterus. . . . For reasons mentioned, I would also advise a disuse of the term 'chronic inflammation.'" In a discussion⁴ upon chronic metritis before the New York Academy of Medicine, Dr. Noeggerath limited the disease to "growth of the cellular tissue both of the body and neck, occurring only during the puerperal state." Dr. Peaslee preferred "to call the disease under consideration congestion, rather than inflammation, because it has none of the events of inflammation;" and Dr. Kammerer expressed the view that "chronic inflammation of the substance of the non-puerperal uterus is never met with; what has been described as

¹ Uterine Disorders, p. 218.

² Dis. of Women, p. 363.

³ Op. cit., p. 129.

⁴ Med. Record, No. 92, p. 475.

such is hypertrophy of connective tissue, resulting from long-continued hyperæmia."

These views, which among men who are in the advance in gynecology are rapidly gaining ground, are not sustained by analogical reasoning, but by anatomical proof. I know of nothing which will more surely convince the reader of the necessity for an alteration in our nomenclature concerning this condition, than a perusal of Scanzoni's¹ article upon it. This author, after heading his chapter, "Chronic Parenchymatous Inflammation of the Womb," goes on to say: "The nature of the disease would then be, in an anatomical point of view, an hypertrophy of the cellular tissue." Certainly the "anatomical point of view" is an important one, and it is supported by what we observe from a clinical stand-point.

So much evil has arisen for pathology and treatment from the use of the term chronic metritis, and so clear a demonstration has been made that the condition so called is not one of true inflammation, that some other appellation is not only desirable, but has become absolutely essential. It is incontestable that there is a peculiar condition that affects the uterus which is characterized by distention of bloodvessels from vital or mechanical cause; effusion of the serum of the blood; and hypergenesis of connective tissue. To denote this state, gynecologists have long required a name, for medical nomenclature is as necessary as it is faulty. Lisfranc felt this need when he styled it "engorgement;" Hodge when he entitled it "irritable uterus;" Bennet when he called it "metritis;" and others also have acknowledged the necessity, Klob, for example, in "habitual hyperæmia" and "diffuse proliferation of connective tissue," and Kiwisch in "infarctus."

The appellations infarctus, engorgement, and hyperæmia only convey a partial idea of the truth; they only announce one element of the condition—congestion; while that of irritable uterus ignores all structural change in announcing another element—nervous hyperæsthesia. At the same time that the phrase "diffuse proliferation of connective tissue due to hyperæmia," which is employed by Klob, clearly defines the pathological condition, it is too long and burdensome to answer the purpose of a name to be conventionally employed. If there be a term now in existence which does really convey the idea truly and completely, it should surely, in the interests of pathology and treatment, as well as out of consideration for the overburdened student of medical nomenclature, be employed in preference to the adoption of a new one. Enlargement of an organ due to formation of new cells similar to those of the tissue in which they are developed, has been styled by Virchow, hyperplasia, in contradistinction to hypertrophy, which consists in increase of size from distention of cells already existing. As the condition of the uterus now under consideration

¹ Dis. of Females, Am. ed., p. 181.

is one arising from over-excitation of the vaso-motor and excito-nutritive nerves, a "formative irritation," as Klob styles it, and resulting in a numerical hypertrophy, it appears to me that the term areolar hyperplasia would more correctly designate it than any other with which I am acquainted. With a sincere desire to lessen and not to increase the labors of the student and the perplexities of the gynecologist, I shall therefore replace the confusing term chronic metritis, by that of areolar hyperplasia of the uterus.

That the term is faultless, I do not claim. To one unaccustomed to it, it must even appear peculiar. I have merely to ask for it a favorable consideration on the grounds that it is faithfully descriptive of the condition to which it is applied, and that a decided necessity for some such term exists.

In a very fair, critical review¹ of the third edition of this work, the reviewer remarks that this name "involves the notion that the connective-tissue elements alone hypertrophy, and disowns the muscular element as the one most readily provoked to increase. We do not deny that, in the disease in question, there is hyperplasia of connective tissue, or, at any rate, of non-muscular elements; but we must aver our belief that concomitantly there is increase in the muscular elements also." At first glance, this appears to be a very strong point of objection; but I think that even the writer himself will, upon more careful examination of the views of pathologists, agree that they look upon the proliferation of areolar tissue as *always* the characteristic or highly predominant feature of the condition, and regard muscular growth as an insignificant accompaniment only. For obvious reasons it is impossible for me to quote largely to sustain this position, and I confine myself to the statement of Professor Klob,² who, in speaking of this condition, expresses himself in the following terms: "The whole uterine connective tissue sometimes proliferates either without accompanying increase of the muscular substance, or, if this does occur, the connective tissue predominates to such an extent that the muscular substance is comparatively of not much account."

It is true, that, while most who have investigated this subject have found, like Klob and Scanzoni, a great preponderance of connective tissue, and an insignificant increase of muscular elements, some have declared that the muscular structure is greatly hypertrophied. One reason for this variance of opinion is this: the most prolific source of areolar hyperplasia, the so-called chronic metritis, is interference with involution of the parturient uterus. What begins as subinvolution ends, in time, in a condition ordinarily styled chronic metritis. He who examines early will

¹ Brit. and Foreign Medico-Chirurgical Rev., Jan. 1873.

² In the American translation of Klob the rendering is not this; but Dr. Kammerer, the translator, informed me that that passage is not correct, but that this is.

probably find a greater amount of muscular elements than he who does so later; and let it be remembered that by continental writers, with one exception,¹ no recognition is made of subinvolution as a disease distinct from what Chomel styled it, post-puerperal metritis. In this way I reconcile the researches of Klob, whose statement I have quoted, with those of Finn,² who reports the following observations, made at the Institute of Pathological Anatomy in St. Petersburg:—

“1. The normal disposition of the single muscular fibre, as well as of the muscular bundle, remains unchanged.

“2. The muscular fibres do not change in quality, neither is their fatty degeneration a pathognomonic sign of this disease.

“3. The muscular fibres are always extended in both their length and breadth above their normal standard, but more so in the former direction.

“4. The number of fibres is always largely increased.

“5. The amount of connective tissue in the latter stage of the disease is always relatively diminished, but absolutely enlarged, so that the increase of bulk of the uterus is mainly caused by the hyperplasia of the muscular fibres, the augmentation of the connective tissue influencing it but little.”

If the disease really consists in a proliferation or hypertrophy of the areolar or connective tissue of the uterus, and not in chronic inflammation, it would certainly be advantageous to apply to it some name which would signify that fact. “Areolar hyperplasia”³ expresses this fact concisely, and hence I have employed it.

Pathology of Areolar Hyperplasia.—The vast majority of cases are due to interference with that retrograde metamorphosis occurring in the puerperal uterus, styled involution. To comprehend the pathology of cases thus arising, it will be necessary to consider the physiology of that process as well as the pathological conditions which may affect it.

It is only within the last quarter of a century that we have understood the process by which the uterus, an organ measuring three inches, in the short space of nine months enlarges so as to contain a child or even two or three children, and then within two months after delivery, undergoes so rapid an absorption as to return to its original size. The credit of elucidating the subject belongs chiefly to Germany, for it is to Virchow, Franz Kilian, Heschl, Kölliker, and Retzius that we are most indebted.

The important pathological fact that arrest in or disturbance of this process constitutes a condition of disease emanated from Sir James Simpson, who, in 1852, published the first article which drew especial attention to it. His article was entitled, “Morbid Deficiency and Morbid Excess

¹ M. Courty.

² Am. Journ. Obstet., vol. i. p. 264.

³ Hypertrophy signifies excessive growth of the elements of a tissue already existing; hyperplasia signifies the development of new tissue.

in the Involution of the Uterus after Delivery." Since that time, the condition which now engages us has become generally recognized as a uterine state of great frequency and moment.

To fully comprehend this part of our subject it is necessary to bear in mind the component parts of the healthy uterine parenchyma. It consists of five elements: 1st. Fusiform fibre cells, or, as they are termed, the smooth muscular fibres; 2d. Round and oval nuclei, which are supposed to be elementary fusiform fibre cells; 3d. Amorphous or homogeneous connective tissue, which permeates the parenchyma and binds together the fibre cells and nuclei; 4th. Fibrillated connective tissue or white fibrous tissue; and 5th. Elastic fibrous tissue. These elements, together with nerves, bloodvessels, and lymphatics, make up the tissue of the uterus, which is covered by a serous membrane externally and a mucous membrane within.

No sooner does this structure feel the stimulus of conception than it develops rapidly, partly by growth of already existing structures and partly by new formations. The round or oval nuclei rapidly develop into fusiform cells, and these as rapidly grow into colossal cells which grow longer and more powerful as pregnancy advances. "A new formation of muscular fibre also takes place,"¹ the connective tissue elements grow proportionately, and the bloodvessels enlarge.

Parturition occurs, and almost immediately a retrograde evolution begins to restore the uterus to its original constituency. The fully developed fibres undergo a fatty degeneration; the fat thus formed is absorbed, and the organ rapidly diminishes in size and weight. This fatty degeneration affects the organ after the fourth day subsequent to delivery, and, according to Heschl, the commencement of a new formation of muscular fibres is recognized in the fourth week after labor, in the form of nuclei and caudate cells. At the end of the eighth week the uterus has returned to its normal state.

Certain untoward influences may retard or check this process, and the uterus remain flabby and large, when it is said to be in a state of subinvolution, or arrested retrograde evolution.

Thus far we have been dealing with facts thoroughly ascertained by histological investigations and fully established by evidence yielded by the microscope. But from this point the pathology of subinvolution is not so satisfactorily settled. Prof. Simpson declared that the disease was due to the fact that "this retrograde metamorphosis of the uterus has not taken place during the puerperal month, or has taken place only to such an imperfect degree that the uterus is of the size we usually see it have at the end of the first week or so after delivery;" but he entered, if I may judge from the posthumous volume of his work upon Diseases of Women,

¹ Arthur Farre, *Cyc. Anat. and Phys.*, article Uterus.

upon no detailed account of the existing pathological defect in the organ. Since his writing, it appears to have been agreed upon that this consists of persistence of the muscular fibres, characterizing pregnancy, in a state of fatty degeneration. Thus Dr. Wright¹ says, "Pathologically it closely corresponds with that state of the heart structure so admirably described by Dr. Richard Quain, and commonly known as fatty degeneration." Dr. West² expresses himself thus: "Though fatty degeneration of the tissues takes place, yet the removal of the useless material is but imperfectly accomplished, while the elements of the new uterus are themselves, as soon as produced, subjected to the same alteration." I search in vain the literature of the pathology of this subject for a basis for these hypotheses. That literature is scanty in the extreme as yet, and the subject awaits extended researches before we can speak intelligently of it. The day has passed, however, when we can let probabilities in pathology pass current for facts.

The best, indeed I may say the only detailed account of this condition studied by the microscope, which I have been able to obtain, is one by Dr. Snow Beck,³ of London. "The enlargement of the uterus did not depend so much upon an increase in the size of the contractile fibre-cells, as upon an increased amount of round and oval globules, with amorphous tissue in the uterine walls. . . . The essential condition of the organ consisted in the elements of the different tissues retaining a portion of the natural enlargement consequent upon impregnation. But this enlargement was more due to the increased size and amount of the soft tissue present in the walls of the uterus, as well as at the internal surface, than to the increased size of the contractile fibre-cells." Marked congestion existed, the bloodvessels being large and forming a complete and continuous system with the capillary network on the inner surface of the uterus. No allusion to preponderance of muscular fibres is anywhere made, and no mention of fatty degeneration occurs.

The condition of the uterine cavity is important. It is always increased in size, the glands of the cervix are usually enlarged, and upon the lining membrane of the cavity fungoid growths are commonly developed.

This is all that can with positiveness be said of the pathology of the early periods of subinvolution in the present undeveloped state of the subject.

The uterus, the study of the tissues of which gave Dr. Beck's results, measured $3\frac{1}{2}$ inches in length, $2\frac{1}{4}$ inches across the fundus, the walls were $1\frac{3}{8}$ inches thick, and the uterine canal was 3 inches deep.

As time passes the uterine walls diminish in size, their tissue grows less

¹ Uterine Disorders, p. 221.

² Dis. of Women, 3d Eng. ed., p. 89.

³ London Obstetrical Trans., vol. xiii. p. 239.

vascular, the bloodvessels become smaller, and the uterine cavity assumes smaller dimensions. But the organ does not assume its original size; it remains large, dense, firm, and sensitive; for years presenting the characteristic appearances of the so-called chronic parenchymatous metritis. Although taking an entirely different view of the pathology of chronic metritis, Dr. West¹ signalizes almost the same fact in the following words: "It must, however, be at once apparent, that after inflammation has passed away, its effects may remain in the larger size and altered structure of the womb, and that the very nature of these changes will be such as to render the repair of the damaged organ both unlikely to occur, and slow to be accomplished, and must leave it in a condition peculiarly liable to be aggravated during the fluctuation of circulation, and alternations of activity and repose, to which the female sexual system is liable." This is just the state to which I allude at the commencement of this chapter, as one existing years after labor, and which, attended by congestion, displacement, catarrh, and granular degeneration, is styled chronic metritis. It is, I think, this state which most frequently furnishes instances of areolar hyperplasia to the microscope.

Let any one faithfully and patiently watch a case of subinvolution for a year or two with reference to this point as I have repeatedly done, and I cannot doubt that he will have the same evidence which makes me so strong in my present belief. Lastly, let it be remembered, that by the French school no condition of arrest of development is recognized as accounting for it; these are cases of "post-puerperal metritis," metritis, according to M. Gallard,² without symptoms, "chronique d'emblée."

Does any one claim that between this condition and chronic metritis a difference should be made? Let him tell me by what means he can at the bedside distinguish one from the other, and I may agree with him. There are no means for such differentiation. If the uterus be very large and the patient recently delivered, the case is termed subinvolution by English writers; if its dimensions have diminished, years have elapsed since parturition, and the almost universal accompaniments of the condition, leucorrhœa, granular degeneration, and displacement, be present, it is styled chronic metritis.

Arrest of involution of the puerperal uterus is an occurrence of very great frequency. It constitutes the chief cause of all chronic uterine disorders, and for this reason its importance cannot be overestimated. Until this subject receives the attention which it deserves, the present confusion as to the causes, pathology, and general features of chronic metritis, which helps to weaken uterine pathology, must continue.

As a very general rule, areolar hyperplasia, the so-called chronic metritis, is a consequence of subinvolution. This constitutes the explanation

¹ Op. cit., p. 89.

² Op. cit., p. 372.

of the fact that so large a number of women with uterine affections refer their illnesses to child-bearing, and that so many who are well until that process remain invalids afterwards. Go back to the commencement of all cases of uterine disease, and a very large proportion will date from parturition. These hyperplastic or subinvolved uteri were those which chiefly furnished Lisfranc's cases of "engorgement," which Jobert "melted down" with the actual cautery, and which hundreds to-day are treating by powerful caustics as parenchymatous metritis. The question may be asked, do I myself not blister, apply leeches, and even amputate the cervix in these cases? The element which sustains the disease is an excessive supply of blood; to diminish this is to strike at the root of the evil. In areolar hyperplasia I blister lightly, to exert an alterative influence upon the nerves; for the relief of coincident congestion, I leech occasionally, as I would for hyperæmia elsewhere; and I amputate, as I would do the enlarged tonsils; but nowhere would I treat the condition as inflammation.

The only apology which I offer for enlarging still further upon this part of my subject, is contained in the fact that I regard it as one of the most important points in the whole of uterine pathology. Even by Parisian writers, who above all others have been wedded to the theory of chronic inflammation, the dependence of a peculiar form of so-called chronic metritis upon disordered involution has been recognized. "The commencement of chronic metritis," says Gallard,¹ "is so insidious, that it is often difficult to determine its date in each particular case. So rare are cases of true acute metritis which, in perpetuating themselves, become chronic, that it is generally admitted that the disease is, to a certain extent, chronic from its commencement. Nevertheless, I consider this passing of acute into chronic metritis as much more frequent than most authors think . . . Aran, after having contested this, was forced to recognize, as the origin of the greatest number of cases of chronic metritis, acute metritis following parturition. This acute stage often passes unnoticed among the sequelæ of labor, scarcely disturbed by slight febrile movements, which excite no suspicion of uterine inflammation so long as they do not present themselves with the alarming symptoms so characteristic of puerperal metritis. Here we see arise a condition which Chomel with his eminently judicious and practical mind was obliged to distinguish from this serious disease by giving it a particular name, that of post-puerperal metritis." . . . "This inflammation, which surprises the uterus before it has finished the work of involution which would reduce it to its normal size, finds in the histological features of this organ circumstances most favorable as well for its development as its perpetuation and its passage into the chronic stage."

If this passage be read with the key which I here offer, it becomes

¹ *Leçons Cliniques sur les Mal. des Femmes*, p. 372.

plain how a condition arises insidiously after labor without the symptoms of inflammation, and yet ends in what is generally called chronic metritis; how a state due to parturition differs so widely from ordinary puerperal metritis, that a new distinctive appellation is required for it; how metritis appears to commence in chronic form; how Aran found this latent, undemonstrative, acute disorder the "source of the majority of cases of chronic metritis;" and how, in spite of the obscurity of early symptoms, M. Gallard is forced to believe that the chronic disease does follow an acute puerperal metritis, the development of which is obscured by the sequelæ of labor. The supposed acute metritis, without symptoms to announce it, which is conjured up to sustain an untenable theory, was really an arrest of retrograde metamorphosis; the chronic metritis, which was afterwards found to exist in full development, with a commencement so obscure that it must have been "*chronique d'emblée*,"¹ was this same condition passing or having passed into areolar hyperplasia. At this time its slowly retrograding muscular fibres have, to a great extent, passed away, but its connective tissue continues exuberant, and the uterus remains large, swollen, tender, and heavy.

Compared with interference with involution, all other pathological influences become comparatively insignificant as causes of this condition; nevertheless they must receive due weight. The tissue of the virgin uterus presents a structure unfavorable to this disorder. That of a uterus once affected by gestation offers a more propitious field for its development.

Displacement of the uterus at first results in passive congestion, this being kept up, hypergenesis of connective tissue takes place. Fibroids, whether they be submucous, subserous, or mural, keep up a constant nervous irritation that induces hyperæmia, which proves the first step towards this affection. In a very important essay, Rouget² proves the uterus to be an erectile organ, as richly supplied with a network of vessels as such organs always are, and very subject to active physiological congestion. It is certain that such a kind of hyperæmia attends ovulation, and it is highly probable that sexual congress has a similar result. From this it will appear how prolongation of the *molimen menstruationis*, and excessive indulgence in sexual intercourse, especially near menstrual epochs, may produce evil consequences.³

As cardiac diseases and abdominal tumors, which interfere with venous return through the vena cava, produce blood stasis and œdema of the feet, of the labia majora, and of the parts about the vagina, so do they result in the same way in the uterus. Klob declares that this purely passive con-

¹ Gallard, *op. cit.*

² Rouget—*Récherches sur les Organes érectiles de la Femme.*

³ Scanzoni calls attention to the fact that it is met with in prostitutes.

gestion is capable of inducing hypernutrition and hypertrophy of the connective tissue.¹

It has been already said that in acute endometritis the hyperæmia attending the disease ordinarily extends to the parenchymatous layers immediately adjacent to the diseased mucous membrane, and that in chronic endometritis there is often in the submucous connective tissue an absolute hypertrophy. In some cases the process passes into a diffuse proliferation of the connective tissue of the entire uterine wall. Thus as a result of cervical endometritis we sometimes find cervical hyperplasia resulting, and so with the disease in the cavity of the body. As I have already stated, where the uterine parenchyma has never undergone that physiological hypertrophy and retrograde metamorphosis attendant upon utero-gestation, endometritis will continue for a long period without exciting hyperplasia; but where such changes have occurred, the more loose and permeable texture offers itself as an easier prey to the morbid process. Thus cervical endometritis will continue for years in a virgin without any apparent enlargement of the structure of the neck, while such a result soon follows in a woman who has borne children. This fact has not attracted special attention, and yet it is a point which every practitioner must recognize, when it is brought to his attention, as one which is familiar. Under these circumstances the enlargement is not due to anything absolutely connected with parturition. Parturition has been the predisposing cause; endometritis the exciting.

A very striking illustration of this affection due to non-puerperal causes is related by Dr. West, whose observation seems to have led him to very similar conclusions with mine. "Some years ago," says he, "I saw a lady, aged forty-three, who, during thirteen years of married life, had never been pregnant. She had always menstruated painfully, and rather profusely; and both these ailments had by degrees grown worse, and this especially during the last few months. She complained of a sense of weight and dragging immediately on making any attempt to walk, and induced even by remaining long in the sitting posture. . . . Menstruation was very profuse, accompanied by discharge of coagula, while at uncertain intervals during its continuance most violent paroxysms of uterine pain came on. On examination the enlarged uterus was distinctly felt above the symphysis pubis, as large as the doubled fist, and per vaginam the whole organ was found much enlarged, and much heavier than natural; the cervix large and thick, but not indurated; the os uteri small and circular; and the hymen was entire." He goes on to say: "Whenever the uterus is exposed to unusual irritation, it increases in size; not necessarily, nor I believe generally, as the result of inflamma-

¹ Klob, op. cit., p. 130.

tion, but because the organ is composed of formative material, which excitement of any kind will call into active development."

In the first stage of the disease, the hypertrophied areolar tissue is congested, containing absolutely more blood than normal, and the whole of the affected part, neck, body, or entire uterus, is greatly increased in size and weight. As time passes, the second stage of the disorder supervenes, and an opposite state of things is set up. Klob describes it in these words: "The parenchyma on section appears white or of a whitish-red color, deficient in bloodvessels, from compression of the capillaries by the contraction of the newly formed connective tissue, or from partial destruction or obliteration of vessels during the growth of tissue; the firmness of the uterine substance is also increased, simulating the hardness of cartilage, and creaking under the knife." This constitutes a true sclerosis¹ of the uterus.

Every practitioner must have met with cases in which a large, red, engorged, and soft uterus, examined after an interval of several years, has been found, to his surprise, to have become small, densely hard, white, and anæmic, and its cavity diminished in size. Such an organ removed from the body cuts like fibrous tissue, and appears when cut almost as dense and bloodless.

In leaving this important and interesting part of my subject, let me sum up what has been said, in a few words:—

1st. The condition ordinarily styled chronic metritis consists in an enlargement due to hypergenesis of its tissues, especially of its connective tissue, which induces nervous irritability, and is accompanied by congestion.

2d. Decidedly the most frequent source of this state is interference with involution of the puerperal uterus. A very large proportion of the cases of so-called chronic parenchymatous metritis are really later stages of subinvolution.

3d. Areolar hyperplasia is often induced in a uterus which has once undergone the development of pregnancy, by displacement, endometritis, and other conditions inducing persistent hyperæmia.

4th. The same influences may possibly produce it in the nulliparous uterus, most frequently they do so in the neck, but such a result is exceedingly infrequent.

5th. However produced, the condition is one of vice of nutrition engendering hyperplasia of connective tissue as its most striking feature, and, although attended by many of the signs and symptoms of inflammation, it in no way partakes of the character of that process.

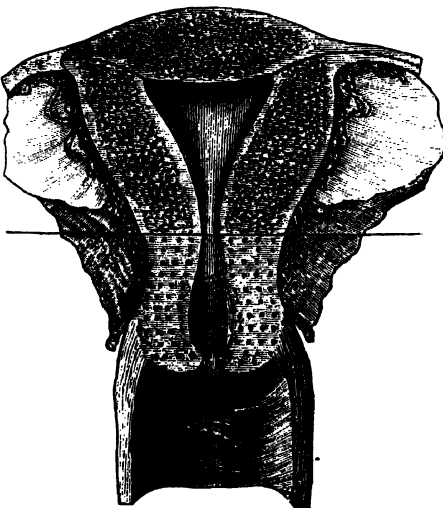
It has been maintained by some that acute puerperal metritis extends

¹ The term sclerosis was, I believe, first applied to this condition by Skene, of Brooklyn. Subsequently Gallard likewise employed it.

itself into the chronic metritis of the non-puerperal state, and this form of the affection has been differentiated from subinvolution. I have seen no evidence of the correctness of this view, nor do I believe that any such distinction can be made at the bedside.

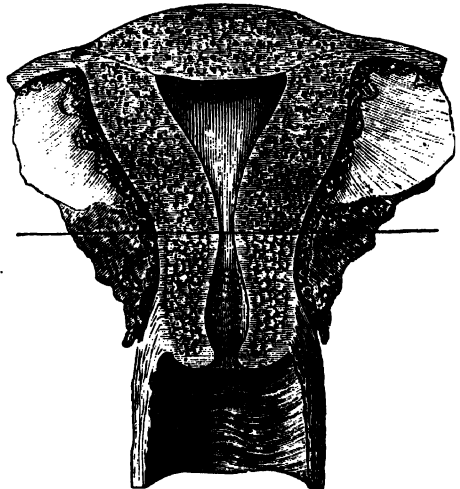
Course and Termination.—The length of time which this condition may last is very uncertain. After the connective tissue once becomes thoroughly affected by the disease, it rarely returns to its original condition, but so complete is the relief which may be afforded the patient by removal of those concomitant conditions that attend upon it and increase the discomforts which are due to it, that she will often for years imagine herself well. Very suddenly, however, imprudence during menstruation, the act of parturition, over-exertion, or some other influence creating congestion, will produce a relapse which will convince her of her error. It is astonishing to what an extent enlargement of the cervix as a result of areolar hyperplasia will go. Sometimes this part will equal in size a very small orange, and, filling the vagina, will compress the rectum to such an extent as to interfere with its functions. Uninterfered with by art the disease has no fixed limits. The increase of uterine weight which it induces usually results in displacement. This increases already existing congestion, and the patient suffers, until the menopause at least, from endometritis, granular cervix, and the ordinary symptoms of displacement.

FIG. 122.



The dots represent the site of cervical hyperplasia.

FIG. 123.



The dots represent the site of corporeal hyperplasia.

In some cases contraction of the exuberant tissue occurs, and uterine atrophy with its accompanying symptoms takes place.

Varieties.—Whatever be its cause, areolar hyperplasia may affect the

entire uterus; it may limit itself to the neck, extending from the os externum to the os internum; or it may affect the body from the os internum to the fundus. The habitat of hyperplasia limited to the cervix is represented by Fig. 122, while Fig. 123 represents that of the corporeal variety.

Whether arising from imperfect involution or from non-puerperal causes, this limitation to cervix or body will be frequently observed. Dr. West¹ alludes to the cervical variety as "one in which the enlargement is limited to the neck of the womb, and sometimes even involves only one lip, generally the anterior. In the latter case it is usually consequent on childbearing, and perhaps is, strictly speaking, rather the result of a partial deficiency of involution of the uterus than the effect of a generic hypertrophy of the part." This fact was first announced in Great Britain by Dr. Evory Kennedy.

Frequency.—This affection is one of great frequency, and as it was formerly universally regarded as chronic parenchymatous metritis, this is one great reason why inflammation of the structure of the uterus was thought to be so common. This fact makes its careful study a matter of great moment to the gynecologist. I do not hesitate to declare that he who fully masters it and thoroughly appreciates its frequency and influence will possess a key to the management of numerous cases which would in vain be sought for elsewhere.

As I have before remarked, interference with that retrograde metamorphosis of the puerperal uterus which is now styled involution is in the great majority of cases its cause. Surprise may for this reason be excited by the assertion that of all forms of the affection, the cervical variety is the most frequent. The reason for this is to be found in the facts that cervical endometritis, which in multiparous women proves a not infrequent source of the disorder, is more common than the kindred affection of the body; that the cervix is peculiarly exposed to mechanical injury from coition, friction against the vaginal walls, and laceration, occurring during parturient distention; that after childbearing the connective tissue at this point is looser and more permeable than that of the body; and that when involution is retarded for some months and then is accomplished, it sometimes takes place in the body, but fails to do so in the neck from that exposure to injurious influences which has just been alluded to.

The body of the uterus is so completely removed from contact with mechanical agencies outside of the abdomen that this part of the organ, as already stated, is not so frequently affected by hyperplasia as the corresponding tissue of the cervix. Still it is by no means unfrequently diseased. A large number of cases of obstinate uterine disorders occurring as a remote result of parturition are really of this nature, and the displacements, rebellious leucorrhœa, and other concomitant evils which characterize them,

¹ Op. cit., p. 93.

are merely symptoms of this affection or of some of its resulting complications. An important fact connected with this state is that where hypertrophy of the connective tissue exists, transient attacks of active congestion frequently occur and excite acute symptoms. These pass away, leaving the basis of the affection in its original state, again to return with all the signs of relapse. And thus a series of short but severe exacerbations go on developing themselves in the ordinary course of an attack of the disorder.

Predisposing Causes.—These may be enumerated as—

- A depreciation of the vital forces from any cause ;
- Constitutional tendency to tubercle, scrofula, or spanæmia ;
- Parturition, especially when repeated often and with short intervals ;
- Prolonged nervous depression ;
- A torpid condition of the intestines and liver.

Nulliparity secures, to a very great extent, an immunity from the disease, and multiparity constitutes a most important predisposing cause. This fact arises not merely from its being, as it often is, an immediate consequence of the parturient act, but from the peculiar tissue changes of utero-gestation rendering the uterus prone to its development. “Frequently,” says Klob, “this proliferation of connective tissue is developed after repeated deliveries in rapid succession without any previous or existing inflammation, . . . and sometimes is developed in consequence of the puerperal condition.” Its “causes must be sought for in habitual hyperæmia;” consequently whatever state gives a tendency to this must be regarded as a predisposing cause, while one which induces and perpetuates it must be looked upon as exciting. The woman who has never been pregnant is much less liable to areolar hyperplasia than she whose uterus has undergone the tissue changes of utero-gestation. Nevertheless, in very rare and exceptional cases, I think that she may suffer from it. In the whole of my experience I have seen but two or three cases, and the diagnosis in these is based upon clinical evidence alone.

Here let me guard the reader against a fallacious argument which is often used in reference to this matter. As areolar hyperplasia is rarely seen except in women who have borne children, it is said that it is always the result of interference with involution. This is incorrect. A woman bears a child, has no post-partum trouble, and goes through uterine involution perfectly. A year or two afterwards she has endometritis. This in time produces areolar hyperplasia with its usual symptoms and physical signs. The same kind and degree of endometritis in a nulliparous woman would have lasted for years without parenchymatous complication. In the former case the endometric disease existed on ground favorable to hyperplasia, because an important predisposing cause existed. In the latter such predisposition was wanting.

The exciting causes are the following :—

- Over-exertion after delivery ;
- Puerperal pelvic inflammation ;
- Laceration of the cervix uteri ;
- Displacements ;
- Endometritis ;
- Neoplasms ;
- Cardiac disease ;
- Abdominal tumors pressing on the vena cava ;
- Excessive sexual intercourse.

After delivery many of both these sets of causes are developed by the pernicious system of management which nurses frequently adopt. The nerve and blood states of the woman are depreciated by starvation, impure air, and disturbance of sleep by attention to the wants of a child, while the enlarged uterus is forced into retroversion and the congestion which it induces, by a very tight bandage, rendered still more hurtful by a thick compress over the uterus. The practitioner who regards delivery of the placenta as the end of the third stage of labor furnishes a marked predisposing cause. The third stage of labor consists in complete and permanent contraction of the uterus, and may not be accomplished for hours after the expulsion of the placenta. No obstetrician has done his duty who leaves his patient before its accomplishment.

Symptoms.—It is impossible to present the symptoms of this condition entirely separated from those of complications which very commonly attend it, such, for example, as displacement, laceration of the cervix, ovarian congestion, granular cervix, etc. These states of course produce symptoms of their own which mingle with those of the main disorder. The symptoms then, which are due to areolar hyperplasia and its almost inevitable complications, are the following. If the cervix alone be affected there are—

- Pain in back and loins ;
- Pressure on bladder or rectum ;
- Disordered menstruation ;
- Difficulty of locomotion ;
- Nervous disorder ;
- Pain on sexual intercourse ;
- Dyspepsia, headache, and languor ;
- Leucorrhœa.

If the affection be general or corporeal, graver symptoms manifest themselves.¹ Chief among these are—

¹ It must not be supposed that all these symptoms occur in all or even in the majority of cases. In many cases few, and in some almost none of them will be recognized.

A dull, heavy, dragging pain through the pelvis, much increased by locomotion ;

Pain on defecation and coition ;

Dull pain beginning several days before menstruation, and lasting during that process ;

Pain in the mammæ, before and during menstruation ;

Darkening of the areolæ of the breasts ;

Nausea and vomiting ;

Great nervous disturbance ;

Pressure on the rectum with tenesmus and hemorrhoids ;

Pressure on the bladder with vesical tenesmus ;

Sterility.

Physical Signs of Cervical Hyperplasia.—Vaginal touch will generally discover that the uterus has descended in the pelvis so that the cervix will rest upon its floor. The cervix will be found to be large, swollen, and painful, and the os may admit the tip of the finger. If the finger be placed under the cervix and it be lifted up, pain will usually be complained of, and if it be introduced into the rectum so as to press upon the cervix as high as the os internum, it will often reveal a great degree of sensitiveness. Under these circumstances the direction of the uterine axis will generally be found to be abnormal. The cervix will in some cases have moved forwards and the body backwards, or the opposite change of place may have occurred.

Physical Signs of Corporeal Hyperplasia.—If two fingers be carried into the vagina and placed in front of the cervix so as to lift the bladder and press against the uterus, while the tips of the fingers of the other hand be made to depress the abdominal walls, the body of the uterus will, unless the woman be very fat, be distinctly felt, should the organ be ante-flexed. Should it not be detected, let the two fingers in the vagina be now carried behind the cervix into the fornix vaginae, and the effort repeated ; if the uterus be retroflexed or retroverted, or even in its normal place, it will be detected at once. By these means we may not only learn the size and shape of the organ, but its degree of sensitiveness. This may likewise be accomplished to a certain extent by rectal touch. The uterine probe may then be introduced, the cavity measured, and the sensitiveness of the walls carefully ascertained.

A point which should be settled before the diagnosis can be considered complete will be, whether the cervix alone is affected, or whether its enlargement is only a part of a general uterine development. To determine this question, two means are at command : first, the examiner, introducing one or two fingers under the body of the uterus, and depressing the abdominal walls by the other hand, so as to clasp the fundus, ascertains whether it is larger than it should be, or of normal size and free from sensitiveness.

He then passes the uterine probe into the cavity of the body, and measures it. If the uterine cavity be increased in size, the evidence is in favor of the disease having extended to the tissue of the body. Should its size be normal, this is probably not the case. This sign is not, however, to be entirely relied upon.

Differentiation.—When the whole uterus is affected, or the body of the organ alone is enlarged, the diseases with which areolar hyperplasia may be confounded in its first stage, are :—

- Pregnancy ;
- Neoplasms ;
- Periuterine inflammations.

From these a careful differentiation should be made; for if in error, the practitioner would not only fail in giving relief, but, in some cases, might do great injury. For example, an examination by the probe might produce abortion, or so aggravate periuterine inflammation, as to cause serious and alarming consequences. The introduction of the probe or sound should, for this reason, be practised with great caution, and only when good reason exists for supposing pregnancy and periuterine inflammation absent.

Between pregnancy and endometritis with corporeal hyperplasia, there is a chance of error in diagnosis; for in both there are enlargement of the breasts, darkening of the areolæ, enlargement of the uterus, derangement of the nervous system, and nausea and vomiting. In the one, however, menstruation does not cease, there is no kiesteine in the urine, there is great sensitiveness of the body of the uterus, and an abundant leucorrhœa. Dr. Tilt has drawn especial attention to this important fact, in connection with endometritis: “When most of the symptoms of early pregnancy are present,” says he, “without menstruation being suspended, in comparatively young women, internal metritis may be suspected.”

Fibrous growths in the uterine walls will sometimes, from the peculiar symmetry of their development, completely mislead us, giving uterine enlargement, leucorrhœa of bloody character, etc. I have now in my possession a uterus in the anterior wall of which a fibrous tumor, equal in size to a goose’s egg, gives upon superficial examination all the appearances of engorgement and hypertrophy of uterine tissue with ante flexion and endometritis. In the same manner polypoid growths or submucous fibroids might give trouble in diagnosis. Under such circumstances reliance would have to be placed upon the use of the sound, conjoined manipulation, and tents, together with the rational signs.

Periuterine inflammations fix the uterus, create hardness and swellings in the iliac fossæ and pouch of Douglas, and sometimes produce purulent discharges.

Sometimes, suspicion of scirrhus cancer in an early period being entertained, it becomes necessary to decide between its existence and that of

the second stage of areolar hyperplasia or sclerosis. Scanzoni doubts the possibility of deciding, but it appears to me that the investigator will usually succeed in doing so, by the following comparison of signs and symptoms :—

In Cervical Sclerosis.

The patient shows no cachexia.
There is tendency to amenorrhœa.
The history usually points to parturition.
It has been preceded by symptoms of uterine enlargement.
The cervix feels like dense fibrous tissue.
The body is perhaps implicated.
A sponge-tent softens the tissue.¹

In Scirrhus Cancer.

She often does.
There is tendency to hemorrhage.
It does not.
It has not.
It feels almost like cartilage.
It is very rarely so.
It leaves it hard and dense.

Prognosis.—The prognosis in hyperplasia of the entire uterus or of the body alone is unfavorable with regard to complete cure, though highly favorable with reference to great relief of symptoms and to danger to life. Should the patient be approaching the menopause, it is possible that, after the functions of the uterus cease, atrophy may occur and relief be obtained. But one cannot be sure even of this, for the monthly discharge may give place to metrorrhagia, or all the symptoms may continue in spite of the menstrual cessation. Under a course of local treatment, combined with one conducted with special reference to the general system, hope may always be held out that, although restoration of the uterus to its normal condition may not be effected, the evils resulting from the complications of this disease can be so fully controlled that comfort will be obtained. When the neck of the uterus alone is affected, a favorable prognosis may always be made, for here there are fewer grave complications to be encountered; such, for example, as corporeal endometritis, menorrhagia, etc. The diseased part is likewise more accessible to local treatment, and is also a much less sensitive and important part of the organism; I might indeed almost say a less important organ, so distinct are the uterine body and neck physiologically and pathologically. As I have elsewhere stated, the prognosis will depend in a great degree upon the patient. If she be unwilling to sacrifice her inclinations and pleasures, but half fulfil the directions of the attending physician, and clandestinely expose herself to prejudicial influences, the treatment will accomplish nothing. In the case of a reasonable patient, who appreciates what is at stake, and is anxious to regain her health, it may be regarded as favorable.

Complications.—Areolar hyperplasia may give rise to many and serious complications, as, for example, displacements, cystitis, rectitis, cellulitis, endometritis, menstrual disorders, hysteria, dyspepsia, ovarian disorders, etc.

¹ This test originated with Spiegelberg.

The question has been raised by Dr. Noeggerath as to the causative influence of this disease in the production of canceroid affections. In an essay read before the New York Academy of Medicine in 1869, he reported six cases which he regarded as due to the "transformation of the tissue affected with chronic metritis into epithelioma or cauliflower excrescence." The object of the essay was "to prove that the tissue of the uterus affected with chronic metritis is apt to be transformed into papillary epithelioma." My experience has never furnished me with a case illustrative of the correctness of Dr. Noeggerath's opinion. It certainly cannot be an ordinary sequence of events, for the subject long ago attracted attention, and I know of no recent author who takes similar ground. Klob's¹ opinion is expressed in these words: "What has been said by various authors on the relations of diffuse growth of connective tissue to the development of carcinoma must be considered as a mere hypothesis."

Treatment.—Let me urge upon the practitioner, as a rule to be observed in every case, before treatment is adopted for this disorder, to examine for and remove, if discovered, the five following complications which very often accompany areolar hyperplasia, and establish symptoms which greatly increase the evils attending it. So important do I consider them, that I give them decided prominence.

1st. Laceration of the cervix uteri, which creates intense nervous irritation, both immediate and reflex, and consequent uterine congestion and neuralgia.

2d. Displacement of the uterus, which results in vascular engorgement, dragging upon uterine ligaments, mechanical interference with surrounding parts, and difficulty in locomotion.

3d. Fungoid degeneration of the endometrium, which results in profuse leucorrhœal and bloody discharges.

4th. Granular and cystic degeneration of the cervix, which produce nervous and vascular derangement of the uterus, leucorrhœa, and menorrhagia.

5th. Vaginitis, which is excited by the discharge dependent upon engorgement of the endometrium.

He will be most successful in the treatment of areolar hyperplasia who most assiduously searches for and cures these complicating conditions before addressing remedies to the main affection.

Laceration of the cervix, and exposure of the delicate walls of the cervical canal to friction against the vagina, is so frequently not only a concomitant circumstance but, I think, a cause of this condition, by interfering with involution, that it should always be looked for. Let it not be supposed that a mere visual inspection will reveal its existence. It will often

¹ It must be noted that Klob alludes to carcinoma, while Noeggerath limits his statement to epithelioma.

fail to do so while the red and excoriated cervical walls are being for long periods treated for so-called ulceration by caustics and alteratives. To test the question, a tenaculum should be fixed in each labium cervicis, and these should be approximated so as to present to the eyes of the examiner the perfect cervix as it existed before the accident. Once discovered, the inner surfaces of the torn lips should be thoroughly pared and brought together by suture. Such an operation will often have a most happy effect upon the uterine disorder; nervous irritability will disappear, and nutrition become greatly improved by removal of this focus of irritation.

If displacement exist, great benefit will be obtained from support rendered by means of a light and well-fitting pessary, the elastic ring of Meigs if there be merely direct descent; Hodge's double lever or one of its varieties if there be retroversion; or an anteversion pessary if the uterus have fallen forwards. In some cases the benefit derived from these instruments will be the chief, perhaps the only relief which we can bestow, and even where we cannot cure the disease we may by their use render life much more agreeable by the alleviation of discomfort.

If evidences of fungoid growths on the endometrium exist, the whole cavity should be gently scraped by the wire-loop curette, and this source of leucorrhœa, metrorrhagia, and uterine congestion taken away.

At the same time that I have elsewhere urged that too great importance should not be given to granular and cystic degeneration of the cervix, I would not ignore the fact that, once established, they become a source of irritation, and thus of uterine engorgement. They should by all means be treated and removed.

Vaginitis is secondary to uterine catarrh, which is a very common accompaniment of hyperplasia. It should be treated by the ordinary means elsewhere indicated, and a recurrence prevented by relief of the endometrial disease.

The subject carefully analyzed presents itself in this way. If the abnormal condition, which has created arcolar hyperplasia, has passed away, this condition is not *in itself* the source of many disagreeable symptoms. No woman thus affected feels perfectly well, but she is often sufficiently comfortable to be able to perform all her duties in life. But the uterus thus diseased is peculiarly liable to certain complicating conditions which have just been mentioned, and these create a great deal of discomfort by production of pains in the back and loins, nervousness, leucorrhœa, and menstrual disorders. These symptoms are then in a great degree, as I stated in giving the symptomatology of hyperplasia, due to the complications of the disorder, and not to the disorder itself. In other words, sustain a hyperplastic uterus, keep it free from displacement, granular and cystic disease of the cervix, and uterine catarrh, and the patient will be so comfortable as, in most instances, to feel satisfied with her condition. Sometimes this is all that we can accomplish. The mere fact of accom-

plishing these results will, however, do much for the cure of the disease itself. Relief of displacement favors free venous return and prevents congestion which feeds and perpetuates hyperplasia. Cure of uterine catarrh and of granular and cystic degeneration of the cervix removes two great causes for hyperæmia of mucons and submucous tissues. The means employed for the relief of these symptoms even do more, they tend by their own direct influence to alter the morbid state of the nerves of the part, to diminish the calibre of bloodvessels under their control, and thus to check excessive nutrition and secretion.

All complications being removed, the practitioner has now to deal with a large, heavy uterus, the tissue of which is exuberant, the bloodvessels enlarged, and the nerves in a condition of hyperæsthesia.

Let me enumerate the indications to be met by a few leading propositions.

1st. Everything possible should be done to prevent congestion, and remove that already existing.

2d. Every attention should be given to the restoration of the general system, especially the blood and nerve states.

3d. All weight should be taken from the large and heavy uterus.

4th. Nervous hyperæsthesia should be relieved by every means in our power.

The means for furthering these ends may thus be presented :—

Rest ;
General treatment ;
Depletion ;
Emollient vaginal injections ;
Alteratives.

Rest.—The patient should be instructed to take much less exercise than usual, to lie upon her bed or lounge for an hour every day about mid-day, and to be especially quiet during menstrual periods. It is as a general rule highly improper to confine her to bed, for many women become restive under the confinement, and suffer both in mind and body, the sanguineous and nervous systems being impaired by want of fresh air. If the connective tissue be so much affected that the cervix is very painful upon pressure, absolute rest upon the back may become necessary, but my impression is that deprivation of fresh air and exercise ordinarily does more harm than is compensated for by the advantages arising from quietude. Every day she should go, unless deterred by some special cause, into the open air, and a limited amount of exercise should be inculcated as a means of keeping up the general health.

Within a few years Dr. Weir Mitchell has introduced a plan for treating cases of neurasthenia which consists of complete rest. The patient is for a period varying from six weeks to three months kept as quiet, upon

her back in bed, as if she were a marble statue ; or rather, I should say, as far as voluntary motion is concerned. She is fed by an attendant who is constantly by her side, and is not allowed even to lift her arms from the bed. Meantime she is very thoroughly nourished by milk, animal broths, malt, cod-liver oil, eggs, and other nutritious substances, every two or three hours ; while cutaneous action is excited, peripheral circulation kept at a maximum of activity, metamorphosis and elimination increased, and muscular strength fostered, by manipulation, passive exercise, electricity, and kneading. The moral faculties are likewise supervised ; hysterical symptoms are controlled by moral suasion, judicious neglect, and an earnest appeal to the reason of the patient ; and the mind is made to feel the influence of alienation from home influences by entire seclusion from friends and relatives.

I can of course only allude to this plan, which observation leads me to set a very high estimate upon in the treatment of special cases, and would refer the reader for further details concerning it to the writings of Dr. Mitchell,¹ and to an excellent article by Dr. William Goodell.²

The uterus should be placed at rest as much as possible. Its natural tendency under these circumstances is to fall from its position ; consequently all pressure should be removed from its fundus by wearing the clothing loose, sustaining the weight of the skirts by attaching them to the upper garments, so as to have the shoulders bear the burden, and uncompromisingly abolishing the corset.

At the same time a system of exercises should be practised by the patient calculated to develop the power of the abdominal and thoracic muscles and thus restore or increase the retentive power of the abdomen. These will be alluded to in detail under the head of displacements of the uterus.

Abdominal bandages are very unpopular with many practitioners, who believe that they absolutely do harm. I believe otherwise, and regard them as great adjuvants, not in keeping up the uterus, but in supporting the super-imposed viscera, which, pressed downwards by tight clothing, and badly supported on account of the relaxation of the abdominal walls, fall directly upon the fundus. There is a great variety of abdominal supporters. I have no favorite, for one will accomplish the end in a woman of a certain figure which would be inappropriate for another. That one should be selected which absolutely accomplishes the end in view, namely, sustaining the viscera and supplementing the weakened muscles of the abdomen.

Sexual intercourse often produces bad results in an organ which is so prone to congestion, and great infrequency and caution should be enjoined with reference to it.

¹ *Fat and Blood, and how to make them.*

² *Nerve tire and womb ills, Lessons in Gynecology.*

By combining all these means we do all in our power to place the hyperplastic uterus at rest as we would a fractured bone or enlarged testicle.

General Treatment.—The diet should be plain and unstimulating, but at the same time nutritious, and in every way calculated to maintain the normal state of the blood. Should spanæmia exist, ferruginous tonics, alone or combined with vegetable tonics, should be administered. The bowels should be kept in a perfectly normal state, and the skin active. Specific remedies have been, and are still, employed by some practitioners for diminishing the size of the uterus. Of most of these I doubt the efficacy. During the state of enlargement, that is, before contraction of the exuberant tissue has occurred, ergot, kept up for a considerable time, produces good results. By its power of exciting contraction of the uterine tissue it diminishes hyperæmia, and lessens the bulk of the uterus.

European writers speak in high terms of the alterative influences of the various watering-places and baths of the Continent, as those of Marienbad, Schwalbach, Brücknau, and Kissingen, in Germany, and of Saint Sauveur, Barrèges, etc., in France. None of these equal in reputation the waters of Kreuznach in Germany, the curative property of which is supposed to depend upon the bromide of magnesium which they contain. It is very probable that the hygienic and social influences which surround these places and render them attractive, are to be credited with most of the good that they do. Aran, after admitting that the water of Vichy *may* exert some influence, thus pointedly expresses himself with reference to the others: "Whatever be their composition, in whatever countries they may be found, I know of no work in which we can find an approximation to a demonstration in their favor."

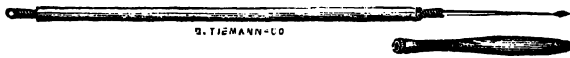
No other general means compares in result with a change of abode and corresponding change of air, habits, and associations. A removal, for example, to the seaside, where bathing can be enjoyed, a sea voyage, or a residence at an agreeable watering place, may accomplish much good. Mental depression predisposes to and aggravates this disease most markedly. Aran goes so far as to say that he has almost invariably found it present as an exciting cause. However this be, cheerful and congenial company certainly proves one of the best nervous tonics in a therapeutic point of view, and should always be sought for. A stay in a well regulated hydropathic establishment, where the patient can have pure air, plain and nutritious food, and agreeable society, together with the strict attention to the general rules of hygiene which characterizes those institutions, will often produce the best effects.

Depletion.—If vaginal touch and conjoined manipulation discover the fact that the uterus is tender, the occasional abstraction of small amounts of blood by puncture or scarification will be beneficial. Not more than an ounce or two should be taken at once, unless amenorrhœa be a symp-

tom. In case this be so, a more copious abstraction by leeches, during the menstrual epoch, will often give great relief. At times leeches then applied to the cervix will give great pain by their bites. This is sometimes so severe as to lead to the apprehension that one has escaped into the cavity; hence it is important that they should be counted before being placed in the speculum, and on their removal from it.

The three methods by which local depletion of the cervix can be best practised are leeching, scarification, and cupping. Three or four large leeches, or a sufficient number of small ones, to take from three to five ounces of blood, may be applied in the following manner: A cylindrical speculum, of sufficient size to contain the entire vaginal portion of the cervix, being passed and the part thoroughly cleansed, a small pledget of cotton, to which a thread has been attached for removal, should be placed within the os, so as to prevent the entrance of the leeches to the cavity above. A few slight punctures, sufficient to cause a flow of blood, should then be made in the cervix, and all the leeches to be employed thrown in, and the speculum filled at its extremity by a dossil of cotton pushed towards the bleeding surface. The speculum should be watched until they cease sucking, for if left for a very short time, even with the mouth of the instrument filled with cotton, they will escape. After their removal all clots of blood should be removed by a sponge or a rod wrapped with cotton, the speculum withdrawn, a large sponge squeezed out of warm water placed over the vulva, and the patient directed to remain perfectly quiet. Should scarification be employed, a very sharp and narrow bistoury or tenotomy knife may be introduced within the os, and drawn outward towards the vaginal edges of the cervix so as to sever all the superficial vessels over which it passes. I would recommend, in preference to this plan, acupuncture, which may be performed by an ordinary three-sided surgical needle held in the grasp of a pair of forceps, or, still better, by a little spear, the invention of Dr. Buttle's, of this city.

FIG. 124.



Buttle's spear-pointed scarificator.

This little instrument, when plunged about one-sixteenth of an inch into the cervix and given a rapid half turn before removal, causes a very free flow of blood should congestion exist. If a sufficient flow does not occur from three or four of its punctures, this can be caused by dry cupping the cervix by a very simple instrument, made of vulcanite, which is introduced through the speculum, the medium size of the cylindrical variety being large enough to admit it. Being passed up to the cervix, the piston is retracted, and so perfect is the working of these instruments, when constructed of vulcanite, that a complete vacuum is produced. By

using this for a few minutes, and then puncturing, with Buttle's spear, from two to four ounces of blood may readily be drawn. The exhauster should not be used after puncturing, but before it. All that will be necessary afterwards will be to pass a moist sponge, attached to a sponge-holder, over the punctured surface so as to prevent clotting in the mouths of the bleeding vessels. Dr. John Byrne, of Brooklyn, has drawn especial attention to still another method, which in some cases answers an excellent purpose. It consists in passing a long, delicate blade up the os internum, and cutting through the mucous membrane, its bloodvessels, and the superficial layer of muscular tissue, as it is withdrawn through the os externum. Local depletion by one of these methods should be practised cautiously, the patient for twenty-four hours after its adoption being kept perfectly quiet in bed.

FIG. 125.



Hard rubber cylinder for dry cupping the cervix uteri.

It is surprising to observe how steadily depletion by all these means has been, during the last ten years, going out of vogue in New York. Many gynecologists with large practices have entirely given it up, and in the Woman's Hospital it has almost completely passed out of use. It must be remembered, however, that the same statement would hold good in reference to abstraction of blood in every other department of medicine.

Vaginal Injections.—A great deal of advantage accrues in these cases, from the systematic use of very copious vaginal injections of water as hot as the patient can bear them. They should be employed for from fifteen to twenty minutes at a time and once in every twelve hours. Their use quiets pain, improves the pelvic circulation, removes irritating secretions, and unquestionably stimulates the absorption of effused material.

Local Alteratives.—The best local alterative is the compound tincture of iodine, which, by means of a brush of pig's bristles, should be carried up to the os internum or even to the fundus, should endometritis exist, and over the whole cervix; then, waiting for complete drying, this process should be repeated. After these applications a wad of cotton, to which a string has been attached in such a way as to leave its surface flat, should be saturated with glycerine and laid against the cervix. This acts as a local hydragogue, and discharges the tissues. These local applications should be repeated once a week, but others should be made oftener by the patient herself by means of vaginal injections, by which the drugs just mentioned may be brought in contact with the cervix.

Should it appear to the practitioner that persistent hyperæmia requires more energetic means than those mentioned, resort may be had to counter-

irritants which vesicate and destroy the mucous membrane of the vaginal cervix, and thus cause a free flow of serum. Such cases grow smaller and smaller in my practice as I grow older in experience, and although I admit the occasional necessity of these means, I caution the reader against a constant or too early resort to their use. They cannot diminish the absolute size of the enlarged organ, and should not be used with any such view. They can remove congestion and nervous exaltation, and in certain exceptional cases may be employed for these purposes.

One of the best methods for practising counter-irritation upon the cervix uteri is by blistering, a means for which we are indebted, I believe, to Aran, of Paris. To blister the cervix, a large cylindrical speculum should be used which will take the whole part into its field. The cervix having been cleansed and dried by a soft sponge or dossil of cotton, a camel's-hair brush is dipped into vesicating collodion, which consists of ordinary collodion, commonly known as liquid cuticle in this country, containing in suspension cantharides, and painted over the whole vaginal cervix, no effort being made to avoid the os. There are two preparations of vesicating collodion, one made with ether, the other with acetic acid. The second is the more powerful and the less likely to affect the vagina. In a few seconds after it is painted on the cervix, it forms a hard, insoluble covering, upon which two or three other coats may be at once applied.

The whole is then exposed to the air by keeping the speculum in place for a few minutes, a stream of cold water projected upon it, to prevent any escape into the vagina, and the process is finished. In from eight to twelve hours the epithelial covering of the cervix is entirely removed by this, and a free flow of serum takes place as from a blister elsewhere applied. After this the patient should be kept perfectly quiet for several days, cleansing the vagina by warm injections, and as soon as the discharge shows a tendency to cessation, the blistering should be repeated. The only objections to this method of counter-irritation are the liability to vaginitis and cystitis from escape of the blistering fluid into the vagina and mouth of the urethra, which can readily be avoided, and the pain which is experienced in some cases while vesication is taking place.

After blistering, pledgets of cotton saturated with glycerine should be applied for the hydragogue effects of that drug.

Vesication may be easily produced by still another method which is both effectual and simple. By means of a solid stick of nitrate of silver, which is rubbed gently over the whole vaginal portion of the cervix, its epithelial covering is destroyed, soon sloughs off, and leaves a granulating surface, which may be dressed with any of the alterative substances mentioned above, or with glycerine.

Mild and lacking in vigor as this course may appear, let any one test it side by side with the plan of using the acid nitrate of mercury, potassa fusa, and potassa cum calce, and the actual cautery; of swabbing out the

uterine cavity with chemically pure nitric acid, or of leaving a piece of solid nitrate of silver to melt within it; and, unless his experience greatly differ from mine, he will feel that in the former he has reached a resting place for his faith in the treatment of the most important of all the forms of uterine disease. He will see proof daily spring up before him that his capacity for benefiting his patients has greatly increased, while his liability to injuring them has as markedly diminished.

Dr. August Martin, of Berlin, advocates amputation of one lip of the cervix for the induction of a species of involution in cases of areolar hyperplasia. Some time ago he reported seventy-two such operations, in only seven of which did any inflammatory symptoms show themselves, and which were invariably followed by a diminution in the capacity of the uterus of from two to three centimetres. In a discussion which followed a paper by Martin, Kehrer, Schröder, and Olshausen agreed with it. This method possesses none of the advantages of trachelorrhaphy, to which it is inferior in every respect. Both operations are usually employed where laceration of the cervix exists as a cause of the hyperplasia.

CHAPTER XXI.

GRANULAR AND CYSTIC DEGENERATION OF THE CERVIX UTERI.

No subject in connection with gynecology has attracted more attention within the past fifty years than inflammatory ulceration of the cervix uteri. Until a comparatively late period it was fully believed in, but, as more careful observation has been practised, the fact has been recognized that unless affected by direct pressure or friction from some solid body the cervix uteri is little prone to simple ulceration. It is, of course, everywhere admitted that cancerous and syphilitic ulcerations may affect this part, but no one would propose to style these inflammatory ulcers. It is likewise admitted, that in a prolapsed uterus, friction against a pessary or the clothing, commonly produces true inflammatory ulceration. But these admissions do not touch the point at issue, and it is fully agreed to-day that the condition lately styled inflammatory ulceration, by Dr. Henry Bennet and his school, was not one of ulceration at all, but one of exuberant growth of the tissues of the cervix with or without laceration of this part, which is much more correctly described under the names which head this chapter.

It not unfrequently happens that one symptom of a disease will so distress and harass a patient that remedial measures must be entirely directed to it, although the practitioner be aware of the fact that it depends on dis-

eases elsewhere located. An example of this is frequently presented in the morbid state under consideration, which, in itself, proves so annoying by its profuse discharge, and interference with the functions of the uterus and with locomotion, as to call for prompt relief.

The vaginal surface of the cervix uteri is covered by a smooth mucous membrane, which is continuous below with that of the vagina, and extending through the cervical canal joins that of the body, which differs widely from it, at the os internum. This membrane is covered over by numerous papillæ which become visible when a sufficiently strong glass is used. One or more slender bloodvessels pass into each and form at their extremities vascular loops, then return, and at their bases pass into adjoining ones. They are completely covered by pavement epithelium and basement membrane. Throughout the cervical canal mucous crypts or follicles exist, which are likewise found scattered over the vaginal portion of the cervix, and even within the cavity of the uterus itself. The diseases of two of these elements of cervical mucous membrane are now to engage our attention.

Granular Degeneration of the Cervix.

Definition.—This condition, which has been described under the names of erosion of the cervix, granular ulcer, and epithelial abrasion, consists, as its name implies, in the development of a surface of granular character on the smooth face of the cervix and just within the os.

Frequency.—It is an affection of great frequency, attending all the diseases of the uterus which result in leucorrhœa, and being commonly a concomitant of most of the diseased conditions of the parenchyma and lining membrane. Very often it exists for a length of time without any suspicion of its presence arising in the mind of patient or physician, and sometimes without causing symptoms which prove in any great degree annoying. At others, grave constitutional signs may be traced to it and entirely removed by its cure.

Causes.—The predisposing causes are:—

- Enfeebled general health;
- Spanæmia;
- The scrofulous diathesis;
- The syphilitic diathesis.

Those which are exciting are the existence of—

- Displacements;
- Endometritis;
- Laceration of cervix;
- Areolar hyperplasia;
- Abuse of sexual intercourse;
- Vaginal leucorrhœa;
- Pessaries which touch the vaginal face of the cervix.

From this array of causes it will appear that it is rarely a disease which stands alone, but that it is usually engrafted upon some other affection of greater moment. Although this is true, it will not do in practice to carry the view too far. At the same time that it must be admitted that granular degeneration, even of aggravated character and considerable proportions, affecting the vaginal face of the cervix, and the distal extremity of the cervical canal, is commonly a consequence of some pre-existing disease, the fact must not be lost sight of, that this affection of itself keeps up a hyperæmia in the subjacent and neighboring parts of the uterus, and even extends a reflex influence to the ovaries.

By almost all writers upon this subject since Récamier's time, too much stress has been laid upon the theory that it depends upon an "indurated and hypertrophied condition of the parenchyma of the cervix." That it results from this no one would deny, but it is equally true that it often arises from other causes, and itself induces this one. In general terms we may say that it is usually produced by, 1st, any disorder which keeps the mucous membrane of the cervix constantly bathed with ichorous fluids for a length of time; 2d, by anything which keeps up friction against the cervix; 3d, by any influence producing and perpetuating congestion of the uterus. Let the reader turn to the list of predisposing causes and he will see that they are just such as to favor these morbid influences, and that the exciting ones are those which absolutely produce them. For example, displacements keep up congestion of parenchyma and mucous membrane, and produce uterine leucorrhœa, and cause friction between the cervix, thus engorged and excoriated, and the vaginal surface. Hyperplasia produces displacement with all its results, furnishing in advance a tissue peculiarly prone to hyperæmia, and already abnormal in character. Laceration of the cervix is a fruitful source of cervical hyperplasia, and the eversion of mucous membrane which attends it establishes friction which results in leucorrhœa and increase of hyperæmia. But it is unnecessary to apply remarks which are so obvious to each of the causes mentioned.

Before Emmet pointed out the pathological bearing of laceration of the cervix, a great many cases of that accident were regarded as granular degeneration. A careful differentiation must be practised with reference to the two affections, while at the same time a proper degree of weight should be given to the fact that granular degeneration often occurs in virgins and involves the whole vaginal face of the cervix.

Symptoms.—Should granular degeneration exist with but trivial disorder of the uterus of any other kind, very few symptoms may be present. Indeed, profuse leucorrhœa is sometimes the only one of which the patient will complain. The fact that other and more serious symptoms generally show themselves, is a corroboration of the statement, that graver disease of the uterus constitutes an important element in such cases. Ordinarily,

these are the symptoms which will be noticed in a case of the more serious kind:—

Profuse bloody and purulent leucorrhœa;
Pain and hemorrhage after intercourse;
Menorrhagia or metrorrhagia;
Pain on locomotion;
Fixed pain in back and loins;
Tendency to spanæmia;
Nervous disorders and perhaps hysteria.

Physical Signs.—Vaginal touch alone might serve as a diagnostic means, for by it the cervix is felt to be covered by a velvety or granular surface, which, to the practised finger, is at once recognizable. But the speculum offers the fullest corroboration or corrects any error committed by this means. By it, the cervix, more especially near the os, is seen to be covered by a mass of pus, which being removed lays bare an intensely red, granular, hemorrhagic-looking space of greater or less extent, closely resembling the inner surface of the eyelids when affected by granular degeneration. The diseased surface does not appear depressed below, but is sometimes even elevated above the surrounding mucous membrane.

Course and Duration.—The disease is unlimited. If the general health improve, it is possible that nature may effect a cure without the aid of local treatment, but such a result should not be anticipated. The degenerated surface may go on for an unlimited time pouring out pus, and thus greatly impoverish the blood and cause grave constitutional results.

Pathology.—According to Ruge and Veit, the maceration of the cervical mucous membrane in ichorous fluids results in the desquamation of epithelium to such an extent that only one layer of cells exists, through the diaphanous structure of which the red colored tissue beneath is visible, with its exaggerated vascular supply.

Very soon from the epithelial layer prolongations project inwards, dividing the subjacent tissue into villi or processes, such as are formed in the vesical and uterine mucous membrane. These villous projections are new formations, not hypertrophied papillæ. They are covered with epithelium, richly supplied with superficial bloodvessels, and liable to increase to large masses. To these the names of varicose and bleeding ulcer and cock's-comb granulation have been given.

Prognosis.—The prognosis in this affection is always good, though it may require a great deal of time to effect a cure, for this will not be permanent unless that of the coexisting disease be accomplished.

Treatment.—Before treatment for this condition is commenced, let me urge the practitioner to examine carefully as to whether he is really dealing with a case of granular degeneration or with one of cervical laceration. The two conditions closely resemble each other; the former often com-

plicates the latter; and a treatment which is appropriate to the one is utterly insufficient for the other.

Granular degeneration being generally a secondary disorder engrafted upon a pre-existing one, before treatment is adopted, the primary disease should be sought for, and both should be treated simultaneously.

Should displacement, endometritis, vaginitis, or areolar hyperplasia exist, attention should be directed to their relief at the same time that this one of their results is treated. It may be asked, if this be true, how is it that the mere application of caustics to the diseased surface will so often effect a recovery without regard to other disease? An influence which commonly induces granular degeneration is congestion of the mucous and submucous tissues at the vaginal extremity of the cervix. The solution of continuity to which the caustics are applied, acts, after their application, as an issue, and they by derivative and alterative influence effect good. It is precisely in accordance with this principle that the practitioner, if called to treat a very obstinate case of cervical hyperplasia, which is unattended by such solution of continuity, creates it by abrading the surface by a blister, and then cures the issue thus caused by such caustics as the nitrate of silver or chromic acid. It is common to hear physicians remark that they are more successful in treating cases of cervical enlargement accompanied by granular degeneration, than those which are free from it. The key to the explanation is, I think, the one here given.

Having presented these remarks and sufficiently insisted upon their importance, I now proceed to the consideration of the special treatment of the condition itself. Before commencing treatment, the general health should receive especial attention; those tonics and hygienic directions which appear best suited to the particular case being given. These indications should from the commencement be as far as possible fulfilled: 1st, the granular surface should be put beyond the influence of friction; 2d, it should be protected from contact with ichorous discharges; 3d, a steady alterative influence should be exerted upon it by local applications; and 4th, congestion of the uterus and of the especial part diseased should be prevented.

To accomplish the first indication the uterus, if displaced, should be put and kept in position by a well-fitting pessary. Even if its axis be normal, it is often excellent practice to lift it out of the pelvis by an elastic ring. At the same time such support prevents a tendency to congestion of the organ, and may be rendered more effectual by careful removal of all weight from the abdomen, by tightly fitting or heavy clothing. Let no one who has not tried this as an adjuvant, undervalue it, for there can be no question of its great utility.

Free use of copious vaginal injections should be practised twice daily, to remove all leucorrhœal discharge, and should this arise from endome-

tritis, that condition should be treated. This indication may further be accomplished by the application of the styptic colloid of Richardson, which consists of a strong solution of tannin in gun-cotton collodion. I know of no means better calculated than this to accomplish all four of the indications enumerated. It appears to act not only as a direct alterative, but, forming a protective crust over the surface, constitutes for it a shield against friction and uterine discharges, while at the same time, by its compression of the excoriated villi, permeated by their loops of vessels, and of the submucous tissue with its increased vascular supply, it diminishes local congestion.

The nerves governing nutrition and circulation in the part should be impressed with a new influence by direct alterative applications. The best solid ones are the stick of nitrate of silver or sulphate of copper; and the most effectual fluid applications, saturated solution of carbolic acid; chromic acid $\frac{3ss}{\text{to water } 3j}$; compound tincture of iodine; equal parts of tannin and glycerine, left in contact with the part on pledgets of lint or cotton; iodoform; and saturated solution of persulphate of iron, pure or diluted with equal parts of glycerine.

It is a good routine plan to begin with a thorough application of solid nitrate of silver, and follow this immediately by a protective coating of styptic colloid.

When an exuberant development of villi, called by Evory Kennedy, I think, cock's-comb granulation, exists, it is well to snip the growths as close as possible to the mucous membrane by a pair of long-handled scissors, or even to scrape the surface until it is smooth, by means of the steel curette, before applying the caustic. After this the same substances may be used as for ordinary degeneration.

Should simple eversion of the cervix exist, the hemorrhoidal mucous membrane should be at once removed by the scissors or destroyed by fuming nitric acid. When this is excessive, and due to laceration of the canal by parturition, the condition may be cured by an operation which consists in paring with long scissors the edges of the cervical fissure, and passing deep sutures of silver wire so as to approximate them thoroughly. By this means the os is restored to its integrity, and the everted mucous surfaces being placed face to face, friction against them is prevented.

The last indication in enumeration, but not in importance, is the prevention of congestion, local and general. To a certain extent this is accomplished, locally, by all the alterative and astringent applications alluded to, and the same thing may be furthered by vaginal suppositories and injections. Should any case prove very obstinate, this end may be more decidedly attained by taking a sharp-pointed, curved bistoury, and beginning as high up the cervix as the disease extends, cutting through the mucous membrane and submucous tissue, extending the incision outside the os as far as the surface is affected. Five or six such superficial

and painless incisions sever the network of little vessels in the submucous tissue, and, for the time at least, interfere with the circulation.

Congestion of the whole uterus is greatly relieved by removal of weight from it by abdominal and skirt supporters; avoidance of muscular efforts; the use of a pessary; careful regulation of the bowels; rest, especially during menstruation; and the use of copious warm vaginal injections.

Applications should be made not only by the physician, who will probably use the speculum not oftener than once a week, but also by the patient, who should make them daily by injections and suppositories. The former should be thus employed: every night and morning a gallon of warm water, containing one ounce of glycerine and one drachm of sulphate of zinc, or two of sulphate of alum, acetate of lead, or tannin, should be injected for a period varying from ten to twenty minutes. Or if it be found necessary to employ a stronger astringent solution, a gallon of pure water may be used first, for the time mentioned, and then a medicated solution, one quart in amount, be used for a short time afterwards.

Vaginal suppositories are by some practitioners employed under these circumstances. A suppository may be made to contain three grains of oxide of zinc, or of sulphate of alum; ten grains of mercurial ointment; five grains of iodide of lead; or two grains of tannin. To any one of these, should an anodyne be needed, one grain of the extract of belladonna, or of opium, may be added. These substances may be made into a mass with powdered gum tragacanth, starch, or slippery elm, and glycerine, and the whole covered with cocoa butter. They may be introduced by the finger, but by the use of the vaginal suppository tube, elsewhere mentioned, there is much greater certainty of their coming in contact with the diseased surface. Suppositories may be employed once or twice a day.

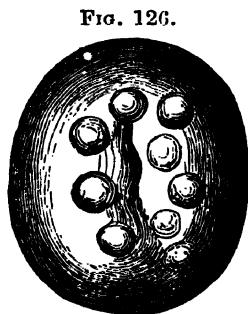
Surprise may be felt at the small amount of medicinal substance which I propose to add to each suppository. A great deal of discomfort often arises from larger doses than I have mentioned. I have repeatedly seen patients for whom two grains of tannin thus administered was too large a dose, and who had in consequence to cut each suppository in half before employing it.

Cystic or Follicular Degeneration of the Cervix.

Definition.—This form of disease, though not so frequent as that last mentioned, is by no means rare. It consists in an inflammation of mucous follicles, which resemble those of the cervical canal, and which are scattered over the vaginal face of the cervix, and exist even in the cavity of the womb. "The cervical mucous cysts," says Farre, "are lined by epithelium and basement-membrane. They contain a small quantity of mucus together with granule-cells. Those upon or near the margin of the os uteri may be sometimes observed to contain short papillæ within their

margin." A recollection of these facts is essential to a full understanding of the stages of this form of degeneration.

Pathology.—Follicular disease of the cervix shows three entirely different phases: 1st. A number of vesicles, equal in size to a millet seed and filled with a fluid like honey, is noticed covering the part. These are due to repletion from retention of the secretion of the follicles. 2d. These cysts are seen open, *i. e.*, they have burst, and a depression marks the former site of each. 3d. The papillæ which they contain undergo hypertrophy and cause the appearance of red, elevated, hemorrhagic-looking tubercles in place of the depressions just mentioned. For the thorough knowledge of this subject we are indebted, as for so much else relating to the anatomy and pathology of the uterus, to Dr. Arthur Farre. Usually the cervix is seen studded over by little globular bodies about as large as a hemp seed, with here and there a depression, and here and there a prominence of red and irritable looking character.



Cystic degeneration of the cervix.

Synonyms.—It will now be readily appreciated why a variety of names should have been applied to this disease when examined at different stages. Follicular disease is supposed to be the source of the eruptive affections described by authors as acne, herpes, and aphthæ of the uterus.

Causes.—Anything which keeps up congestion in the cervical mucous membrane may give rise to this affection of the mucous glands of the vaginal cervix. Among the chief are:—

- Cervical endometritis;
- Granular degeneration;
- Cervical hyperplasia;
- Laceration of the cervix.

Prognosis.—If a few scattered cysts appear, the prognosis is decidedly favorable; but in certain rare cases, where the whole of the extremity of the cervix is filled by them, nothing but amputation of the part containing them accomplishes cure.

Treatment.—The contents of all the cysts should be evacuated by a bistoury, and their cavities thoroughly cauterized by a sharp point of nitrate of silver, chromic acid, or the acid nitrate of mercury. Should the second or third stage exist, the diseased surface should be treated upon very much the same plan as that advised for granular degeneration.

Should a great amount of cystic degeneration exist, and cure not follow evacuation and cauterization of the cysts, the vaginal face of the cervix should be removed by the galvano-caustic wire, or by bistoury or scissors. Here, as in cervical endometritis of cystic character, the rule of surgery which inculcates the ablation of a part which is the habitat of a disease which proves incurable by minor means, should be followed.

CHAPTER XXII.

SYPHILITIC ULCER OF THE CERVIX UTERI.

Frequency.—Syphilis may affect the cervix uteri either as a primary or secondary disorder, though in neither form is it by any means common. It is now a settled fact that true chancre may locate itself upon the cervix, but not the less certain is it that it rarely does so. I have seen but one case which I felt satisfied was of this character. This was proved by inoculation, the most certain way in which a strictly reliable conclusion can be arrived at, and by corroborative evidence existing in the presence of syphilitic roseola without primary disease elsewhere. Dr. Bennet¹ states that in his own practice it has been very rarely met with, and quotes in confirmation of his own experience that of Ricord, Cullerier, Gibert, Duparcque, and others. M. Bernutz, who has made, according to Becquerel,² a special study of this subject in the hospitals of Paris, describes chancres of the os minutely, dividing them into Hunterian, diphtheritic, and ulcerous, which resemble phagedenic very closely. With regard to secondary affections on the cervix, there has been considerable discussion, some regarding them as quite common, others as very rare. Becquerel, after careful research in l'Ourcine Hospital at Paris, was convinced of their occurrence, and Bernutz describes mucous patches, vegetations, erosions, tubercles, and gummy tumors. I know of no more significant evidence of the rarity of these affections upon the cervix than the fact, that in a recent work upon syphilis, a work remarkable for the thorough and comprehensive style with which it deals with all relating to that subject, almost no mention is made of syphilitic affections of the cervix. I allude to the work of the late Prof. Bumstead.³ The author investigates the character of syphilis when affecting all parts of the body, even the lachrymal sacs, the membrana tympani, etc., but nowhere is any mention made of the disease appearing on the cervix, except a cursory statement, that at Bellevue Hospital he had seen some remarkable instances of mucous patches thus located. The sign of the secondary disorder which we would most naturally expect to find in this site would be the mucous patch, as it is one of the most frequent of all the manifestations of that stage; but we are informed by MM. Davasse and Deville,⁴

¹ Bennet on the Uterus, p. 350.² Mal. de l'Uterus, vol. i. p. 169.³ Bumstead on Venereal Diseases.⁴ Davasse and Deville, Des Plaques Muqueuses: Arch. Gén. de Méd., 1845, t. ix, et x.

that of one hundred and eighty-six women affected by syphilis, and examined in reference to the location of its lesions, they were found on the cervix uteri but once.

Course and Termination.—The primary affection being located on the cervix, the general system becomes affected as from a chancre on any other part, and, as M. Gosselin has pointed out, instead of passing off rapidly, as it sometimes does, it may assume the fungous type. During its course the cervical chancre has a marked tendency to become covered by false membrane, which Robert¹ first noted, and Bernutz subsequently corroborated. Unless a fact corroborated by Förster² be carefully borne in mind by the diagnostician, a grievous error may occur in the differentiation of this form of ulcer from malignant disease. He declares that syphilitic ulcers sometimes destroy tissue so freely as to penetrate into the bladder or rectum.

Differentiation.—For evident reasons this is a matter of great importance, not only as regards therapeutics, but because it may involve a delicate legal question affecting the chastity of the woman.

These are the means of diagnosis in cases of chancre :—

- Border of ulcer precipitous ;
- Surface of ulcer depressed ;
- Great tendency to bleed ;
- Great tendency to false membranous covering ;
- Rapid development of constitutional symptoms ;
- Early appearance of roseola ;
- Transmission by inoculation.

All of these signs are of value, but the only ones upon which a positive opinion could be based are the last three.

Secondary eruptions, as for example, mucous patches, vegetations, etc., which appear here will be known by

- Their rapid development ;
- Their connection with constitutional signs ;
- Simultaneous affection of the vagina ;
- Absence of chronic cervical inflammation ;
- The peculiar appearance of secondary eruptions.

Treatment.—This will consist in cases of chancre of the ordinary treatment adopted when such an ulcer affects any other part. In cases of secondary affections the patient should be put upon a mercurial course, the surface cauterized, and subsequent dressings made of mercurial preparations, of which the black or yellow wash, mercurial ointment, and calomel, are the best.

¹ Aran, *Mal. de l'Utérus*, p. 524.

² Klob, *op. cit.*, p. 243.

CHAPTER XXIII.

UTERINE FUNGOSITIES.

History.—The fact that the lining membrane of the uterus becomes covered over to a greater or less degree with fungous masses, which have a marked tendency to bleed, was announced by Récamier, who not only described them, but gave us the best method yet devised for their relief. After attention was called to the subject by him, theses were written upon it in Paris and Strasbourg, by Rouyer and Goldschmidt, and the subject attracted a great deal of notice in France, and received the attention of such men as Marjolin, Robert, Trousseau, Nélaton, Maisonneuve and Nonat, who not only adopted Récamier's pathological views but endorsed and practised his method of treatment. After many years of trial this contribution of the great French gynecologist may be regarded as by no means the least valuable of the many which he has made to this department. For a long time kept *sub judice*, it has of late years found its way into the text-books.

Definition.—Uterine fungosities may be defined as fungous projections from the endometrium, the result of prolonged congestion from any cause, or of the organization of portions of placenta remaining attached to the surface. Under this head, of course, carcinoma and sarcoma of the endometrium might through an error in diagnosis be brought, but the nature of those grave disorders being once recognized, no one would think of classifying them under it. Upon theoretical grounds objection might be raised to classifying under the same head hyperplasia of the lining membrane of the uterus and remains of the placenta, but as the symptoms and treatment of the two conditions are identical, and there is no means of differentiating one from the other, it seems better for practical purposes to consider them together.

Frequency.—Fungoid degeneration of the endometrium is an affection of great frequency; one which plays the part of an important factor in menorrhagia and metrorrhagia, and which often saps the health of patients in whom its existence remains for years unsuspected. The practitioner who recognizes the important bearing of this subject will find himself prepared to cope with many cases of chronic endometritis, menorrhagia, metrorrhagia, and uterine enlargement which before proved entirely rebellious to treatment.

Synonyms.—The disorder is sometimes described as granular hyper-

plastic, or polypoid endometritis, or, as Slavjanky styles it, "internal villous metritis."

Pathology.—Uterine fungosities will usually be found to exist as a consequence of uterine engorgement, however kept up; or of abortion or labor. I have also repeatedly seen them in young women at the age when menstruation is establishing itself, and found them under those circumstances produce a most excessive and dangerous degree of hemorrhage. In the first condition mentioned, prolonged congestion creates a hypergenesis of tissue which results in hyperplastic growths upon the endometrium. In the second, if a large portion of placenta remained attached in utero, what is sometimes styled a placental polypus would be created, but small portions only being here and there attached, these little fungosities are the result. In the third condition, the great impetus given by puberty to sexual growth in the developing girl seems to affect the uterine lining so as to produce localized hypertrophies upon its surface.

Under the microscope these growths if the result of hyperplasia and not of retention of small portions of placenta are found to consist, according to Dr. F. Delafield, who has repeatedly examined them for me, of hypertrophied elements of the mucous membrane, dilated follicles, enlarged bloodvessels, and exaggerated cell growth. Sometimes the amount of material removed at one time will amount to one, two, or three drachms, and its appearance will make one instinctively dread the existence of a malignant basis; but the microscope will commonly even in such cases convey the comforting assurance to the contrary.

Causes.—The causes may be enumerated as follows:—

- Abortion or labor at full term;
- Endometritis;
- Subinvolution;
- Laceration of the cervix;
- Uterine displacement of any variety;
- Fibromata, submucous or interstitial.

All these, except the first, seem to produce the condition by exaggerating formative development, or by keeping up engorgement of the uterine lining membrane.

Symptoms.—There is but one symptom which has any significance, that is uterine hemorrhage. This may consist only in a great exaggeration of the menstrual flow, or in profuse metrorrhagia. Whenever either or both of these is present, without other assignable cause, these growths should be suspected. For example, a patient has lost a great deal of blood from the uterus, and an abnormal condition is strongly suspected as the cause of the excessive flow; no solution of continuity is found to exist, no neoplasm of any kind is discovered, and no large portion of placenta is supposed to be in utero; under these circumstances fungosities should always be suspected, and their existence determined by physical examination. The

method of deciding the question is so simple that it should, under these circumstances, be unhesitatingly employed.

Physical Signs.—Fungosities being suspected to exist, the patient should be examined with Sims's speculum. After its introduction, the cervix should be held by the tenaculum, and if the os externum or cervical canal be very small, it should be gently opened by the introduction of two or three graduated uterine dilators until it will admit the little wire curette to be shown further on in this chapter. An ordinary looped wire answers very well, and I have often made a loop of a lady's hairpin, bound it with waxed thread in the bite of the forceps, and employed that.

All being now prepared, the loop of the wire curette, or the loop of wire, is passed in and drawn gently down the anterior face of the uterine cavity, then of the posterior, and then of each horn. As it is withdrawn after making each exploration, it is examined to see if it has dislodged a fungosity. If there be any within the cavity, and the instrument be not held in very unskilful hands, one or more will be looped off. These may, for greater certainty of diagnosis, be put under the microscope. In some cases a mamilloid process of mucous membrane will be found covered over with epithelium, placed edgewise upon it with great regularity; in others, a piece of placenta will be seen; while in a few cases the tale will be told of commencing cancer or sarcoma, which will yield to no treatment whatever.

It has been said that the curette gently passed over the endometrial surface will reveal little irregularities, even if it do not remove them; and in very marked cases this is true, but he who relies upon this as a crucial test will pass over many minor cases requiring diagnosis and treatment scarcely less than they. The wire hook should be regarded as a valuable diagnostic resource in all endometrial outgrowths. Employed as such, as freely as I make use of it, I have yet to see an accident follow its introduction if applied with caution. I have seen the uterine sound excite peritonitis, but never the wire loop used gently for the purpose merely of diagnosis. By its instrumentality the powerful aid of the microscope is put at our service, and many an obscure case will be made clear, many a doubtful one set at rest by the combination.

Course, Duration, and Termination.—These growths may last, producing their evil results for years; not increasing at all, but not diminishing. If the patient become pregnant, the changes of parturition seem in some cases to destroy their activity, but even this they at times resist, and after delivery the case goes on as before.

Sometimes the little growths will be cast off and appear in the menstrual discharge. But this casting out does not go on to cure. If not interfered with, they will commonly annoy and weaken the patient until the menopause, when, notwithstanding their presence, the uterine flow will usually cease. I say usually, for the reason that in some cases it will obstinately continue at irregular intervals for years after its occurrence.

The remedy to which I have made allusion as having been introduced by Récamier, is the use of the curette, which meets the requirements of the condition perfectly. It must not, however, be supposed that one, or even several applications of the curette, will uniformly cure these cases; many of them will prove very obstinate, rebellious, and perplexing. Some years ago, I attended, with Dr. Fessenden, of Brooklyn, a young lady of sixteen, who, ever since the establishment of menstruation, had lost blood so freely at her periods as to be alarmingly exsanguinated. I employed the wire curette, and removed a great number of large growths, and she got up apparently well. In three months, however, her dangerous symptoms returned, and the operation was repeated and followed by injection of compound tincture of iodine into the uterine cavity. Again she got better, and again had a relapse after a few months. Sims's cutting curette was then employed, and after its use nitric acid was applied by Lombe Athill's method. After this Dr. Fessenden occasionally made an application of iodine to the uterine cavity, and she ultimately recovered.

In another case which I attended with Dr. L. M. Yale, of New York, the curette was, during the course of three years, used ten times, very large quantities of fungous growths being each time removed; and the application of the instrument, Sims's being sometimes employed, and at other times mine, followed by free applications of iodine or nitric acid. After a time we felt sure that sarcoma or cancer must be the basis of the affection, but Dr. Delafield cheered us with the assurance that this was not so, and the justice of his statements was verified by the entire recovery of our patient. In a great many cases I have had to repeat the operation of scraping about once a year for a long time, so that now I always guard my patients against this possibility for fear of their being disappointed at the result.

Another curious fact connected with this operation, which I am at a loss to account for, is the irregularity in menstruation which occasionally follows it. The period next succeeding the operation will possibly be as profuse as those before it, but after this the patient may menstruate very irregularly.

Results.—Directly :—

Menorrhagia;
Metrorrhagia;
Leucorrhœa.

Indirectly :—

Spanæmia;
Sterility;
Constitutional feebleness.

Prognosis.—This will depend in great degree upon the treatment adopted. If the practitioner be one of those who abhor a resort to even

the simplest surgical procedures, and who rely upon constitutional treatment in all these affections, the prospects of the patient for recovery are poor. If, on the other hand, the procedure about to be described here be resorted to, recovery is as certain as the method is simple and safe.

Treatment.—Récamier advised the introduction into the uterus of a small scoop called the curette, by which these growths could be gently scraped off. His advice, although followed by some able men, was not generally accepted, and his method excited a great deal of hostility which even now has not passed away. The reason for this was, I think, the fact that the instrument employed for the procedure was so rough and harsh. At a later period Sims introduced the steel curette shown in Fig. 128. This was an advance over Récamier's method in the superiority of the means for attaining the end. But even the use of Sims's cutting steel instrument was too dangerous, and the operation remained imperfect. For a number of years I have employed the instrument shown in Fig. 129.

FIG. 127.



Récamier's curette.

FIG. 128.



Sims's steel curette.

FIG. 129.



Thomas's wire curette.

It consists of a copper wire with a small loop at its extremity. The loop is slightly flattened at its edges, but still it is not a cutting instrument. Even if applied with force, it can do no serious damage. It removes the growths by looping them off, not by cutting or tearing the endometrium. I employ it very largely in practice, and never yet have I had any accident follow its use in several hundred cases. Of course, as

there are instances in which the passage of a uterine sound will cause peritonitis, so there are those in which this operation may end fatally, but I have never met with one, and no one could use it more freely than I do.

In a very few rare cases in which the wire curette fails to effect a cure, I employ Sims's more powerful instrument, but never do I do this without good reason.

After the operation the patient should be kept perfectly quiet in bed for three or four days, and any tendency to inflammation at once met by the treatment appropriate to peritonitis.

Dangers of the Curette.—The dangers which attend upon the use of the curette are :—

Peritonitis.

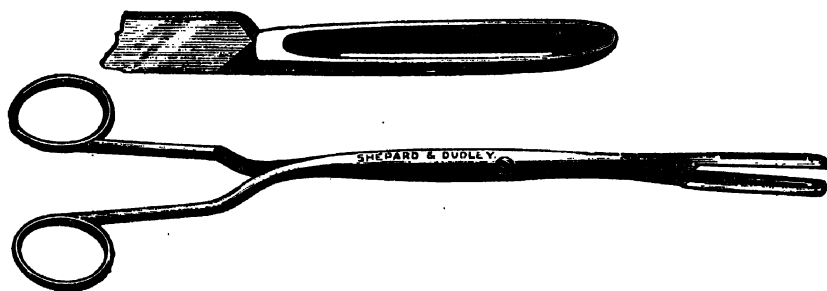
Cellulitis.

Atresia of the cervical canal.

Hemorrhage some hours after operation.

I have seen the first follow the use of the steel curette, never of the wire. It should be guarded against by care after operation, perfect rest for several days, and the free use of opium in case of pain. The second is likely to occur in cases in which cellulitis has existed in chronic form before resort to the curette. The third I have seen in one case after the whole corporeal and cervical lining was thoroughly scraped by the cutting curette. The fourth, which I have once met with, may readily be prevented by the use of a vaginal tampon.

FIG. 130.



Emmet's curette forceps.

Emmet, in the hope of avoiding these dangers, recommends in place of the curette, the use of a pair of forceps with cutting edges shown in Fig. 130.

By these the fungoid growths are seized and removed by alternate separation and approximation of their blades.

CHAPTER XXIV.

LACERATION OF THE CERVIX UTERI.

Definition.—This consists in the tearing of the wall of the cervix uteri during labor either partly or entirely through the tissue which composes it.

History.—It has long been known that during the last part of the first stage of labor, as the presenting part of the child escapes from the uterus and enters the vagina, the circular fibres of the os externum and of the vaginal portion of the cervix not infrequently give way under the excessive distention which occurs, and lacerations in one, two, or more directions take place. In 1851 Sir James Simpson¹ drew attention very fully to this subject, pointing out the facts that lacerations of the cervix uteri are of very frequent occurrence, that they are not the result of mismanagement, that they are so common after first labors as to be regarded as reliable signs of labor having occurred, and that they may be complete or may involve only the mucous and middle coats of the cervix.

Some of the evil results of the condition too were recognized, as will be seen by reference to Dr. Gardner's work upon sterility, where it is credited with the causation of hypertrophy of the cervix, ulceration, cervical catarrh, sterility, and abortion.

But the important pathological bearings of this accident upon disorders of the uterus, has been appreciated only of late years. The credit of having recognized the significance of the lesion, and of having furnished us with a safe and efficient means of cure, belongs to Dr. T. A. Emmet. The future of his operation for its relief will unquestionably be a long and brilliant one, and its results will effect a great deal of good for uterine pathology. Dr. Emmet, after having performed the operation for seven years, published his first paper upon it in 1869. It was not, however, until a second paper by him in 1874 that the importance of his discovery was fully appreciated. Since that period it has gradually risen in favor, although even now its great merits are not generally recognized. It is surely not too much to say of it that it constitutes one of the most important contributions to gynecology which has ever been made.

Frequency.—No reliable statistics are at our disposal upon this subject, for the reason that lacerations of the cervix exist under two forms with

¹ Edinburgh Journ. of Med. Science, p. 488, and works of Sir J. Simpson, Am. ed. p. 152.

reference to pathology : first, they may be important factors ; and second, their existence is recognized by inspection, but they produce no evil results whatsoever. The question is not therefore merely how often the cervix is to a greater or less degree lacerated during parturition, but how often such laceration is productive of results which have an important bearing on uterine pathology. Simpson¹ declared that evidence of a certain degree of laceration is given by "almost every careful autopsy of women after delivery, whether assisted or not assisted during their labor." Emmet² says, "at least one half of the ailments among those who have borne children are to be attributed to lacerations of the cervix." Goodell³ estimates "that about one out of every six women suffering from uterine trouble has an ununited laceration of the cervix." It may be taken for granted, first, that a certain degree of laceration of the vaginal extremity of the cervix uteri is the rule in first labors ; second, that a certain number of these are entirely recovered from or exist with cicatrized surfaces without producing pathological consequences ; and third, that in a large proportion they prove important factors of uterine disease.

The great reason for the varying results of laceration is this : if it interfere with involution of the body or cervix of the uterus, hyperplasia either local or general will result, with accompanying cystic degeneration, catarrhal inflammation, eversion, and congestion ; if, in spite of it, involution goes on to a successful issue, the parts give evidence of the accident only by physical examination, not by pathological results. Upon the recognition of this fact should rest the necessity for operative interference. If it become the rule of practice that all cervical lacerations should be closed without reference to their pathological influences, many women will be exposed to operation without cause and without compensation.

Synonyms.—Lesser degrees of laceration are described as fissures, and cases attended by eversion of the cervical endometrium as ectropion.

Varieties.—Laceration may be partial, where the mucous or middle coats of the cervix are torn through, the external being intact ; and complete where the whole texture of the canal is involved in the rupture. It may likewise be bilateral, unilateral, or stellate.*

Anatomy.—It must be remembered that this accident involves the lining membrane of the cervical canal, with its reticulated mucous membrane and immense number of Nabothian glands. Should it produce pathological results, they will primarily affect these parts, secondarily those which are more remote.

Pathology.—Laceration of the cervix, occurring as it does during parturition, is very apt to interfere with involution of the cervix, of the body, or of the whole uterus. This interference may be very slight or very marked,

¹ Op. cit., p. 152.

² Op. cit., p. 480.

³ Lesson in Gynecology, p. 169.

the degree generally depending upon the extent of the injury inflicted. As a result of the accident, the cervix or whole uterus remains enlarged; cystic hyperplasia affects the cervical endometrium, rich in glands; hypersecretion at once takes place very markedly; and granular degeneration with eversion of the lining membrane occurs. This combination makes up the condition formerly characterized as inflammatory ulceration of the cervix and treated by depletion and caustics.

I would not be understood as maintaining that unless laceration of the cervix produces subinvolution it therefore does no harm, but merely as asserting that it usually and chiefly effects its results in that manner. This is the explanation of the fact that section of the non-parous cervix for removal of tumors or for the cure of sterility or dysmenorrhœa very rarely results in any of the evils ordinarily attendant upon laceration, such as eversion, endometritis, or areolar or cystic hyperplasia. It is not to be denied, however, that laceration of the parous uterine neck, unattended by subinvolution, and section of the non-parous, sometimes, by slight eversion of the mucous membrane and the influence of friction from the vaginal walls, eventuate in areolar or cystic hyperplasia with endometritis and granular degeneration. The last is not a necessary result of laceration, but is produced indirectly by the ichorous mucus which is secreted by the inflamed endometrium.

Causes.—Every patient, when informed as to the existence and origin of this condition, instinctively turns in a direction to which the mind of woman has a natural proclivity, that of censuring the medical attendant for the unfortunate result. It becomes the bounden duty, at the present day, for the gynecologist to remove fully and completely all such disposition on the part of the patient, not as a matter of professional courtesy, but of simple justice. Let a patient be ever so well attended, this accident may, as Prof. Simpson pointed out, occur even after a short and natural delivery. It will be noticed that I say that, “at the present day,” no blame should be allowed to attach to the attending obstetrician. I feel sure that this will not be so in the future. It is true that even then prevention will prove impossible; but not so, early recognition. Six weeks or two months after delivery every parturient woman should, with our present lights, be examined as to the condition of the perineum and cervix uteri. It is an entirely fallacious position to assume that an examination just after labor reveals the real state of these parts. No one could then thoroughly inform himself, except by an exploration the exposure attendant upon which would defeat its practice. As far as the cervical injury is concerned, too, even if discovered just after labor, it could not then be operated on, and by the end of the period of involution it might have entirely disappeared. An examination at the time when a parturient woman should be discharged from the obstetrician’s observation, the end of the period of involution, and not the ninth day, as is now gene-

rally done, would reveal the true condition of things, and in a great many cases avoid for women lives of suffering and invalidism. A laceration of the cervix being discovered, it would not follow that operation would be inevitable, but the obstetrician, being now forewarned, would be prepared to act for the best interests of his patient.

The chief causes of laceration of the cervix may thus be stated :—

- Precipitate labor ;
- Manual delivery ;
- Instrumental delivery ;
- Labor with rigidity of os ;
- Cicatricial material in tissue of cervix ;
- Cancerous degeneration of cervix ;
- Section of cervix during labor ;
- Too early evacuation of the liquor amnii ;
- Abortion.

In my own experience I have met with every cause here stated as productive of this accident, the first three recorded being infinitely the most frequent. Head last labors, calling as they do for the very rapid passage through a badly dilated os of an uncompressed head, often induce it, but these I consider in the category of “manual delivery.” Emmet considers criminal abortion a particularly frequent cause, though it is difficult to see why it should be more so than that from accidental causes.

Symptoms.—The rational signs of this condition are, as a rule, numerous and important :—

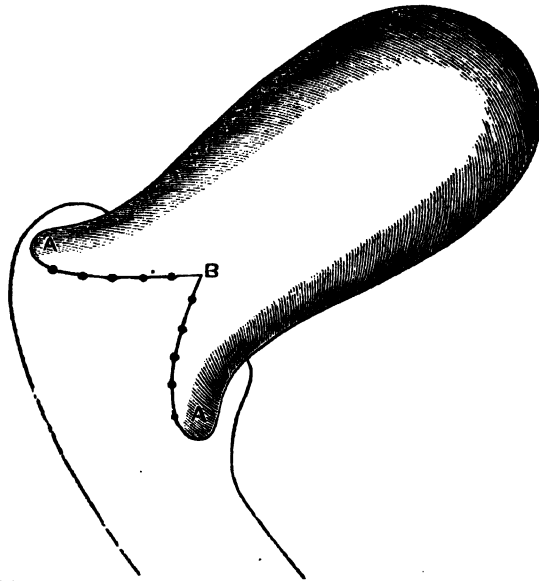
- Pain in back and loins ;
- Sense of “bearing down ;”
- Leucorrhœa ;
- Increase or diminution in menstruation ;
- Sometimes hemorrhage after coition ;
- Neuralgia of cervix ;
- Sometimes sterility ;
- Discomfort in locomotion ;
- Dyspareunia.

All these, of course, do not occur in any one case. Some cases present some of them, and some others.

Physical Signs.—The examination for this lesion should always be made with Sims’s speculum or one of its modifications. By the cylindrical speculum, or by those valvular ones which distend the vagina slightly, it is often not recognizable, and always imperfectly appreciated. This furnishes a good illustration of the truth of the position elsewhere assumed in this work, that the gynecologist who habitually employs Sims’s method of examination stands upon a vantage ground unattainable by one who does not do so.

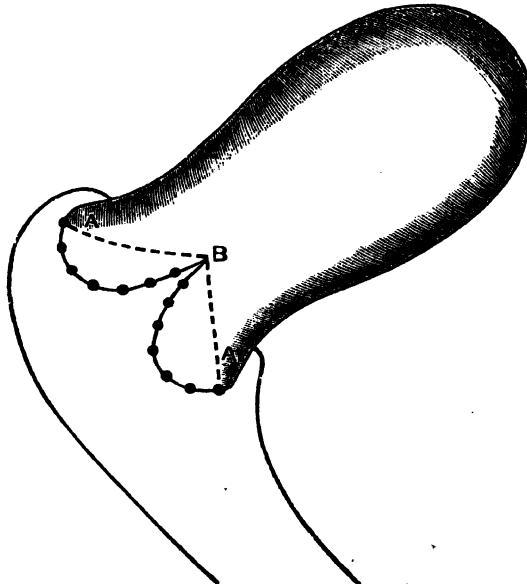
The cervix, being exposed to view, will be seen to present somewhat the appearance shown in Figs. 131 and 132.

FIG. 131.



Bilateral laceration to vaginal junction. A, A, lips of the severed os externum.
B, os internum.

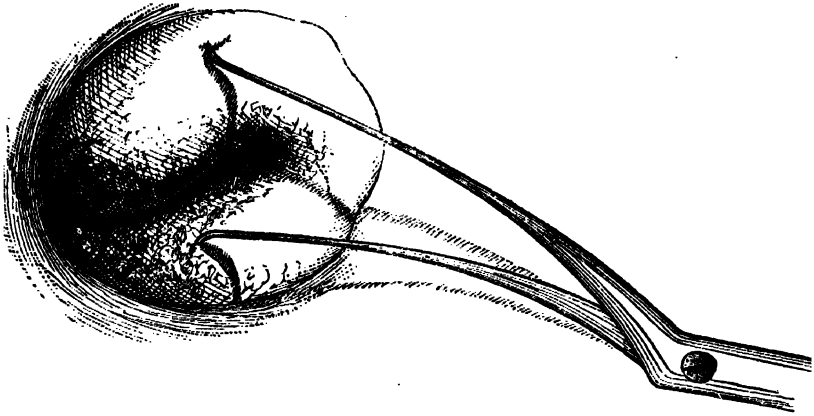
FIG. 132.



Bilateral laceration to vaginal junction, with hyperplasia of cervical walls. A, A, lips of severed
os externum. B, os internum.

In both these diagrams the round spots on the cervical walls represent enlarged Nabothian follicles; in the second the dotted lines must receive no attention, as they refer to something to come hereafter. But these diagrams, although conveying correct ideas of the general nature of cervical lacerations, do not sufficiently portray the many variations which this interesting and important lesion may assume. Fig. 133 represents the

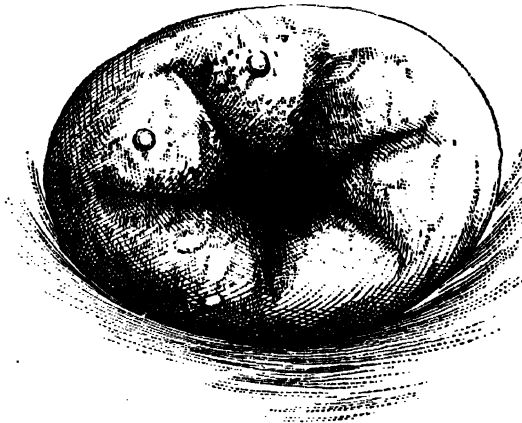
FIG. 133.



Double tenaculum separating the flaps of a [unilateral] laceration. (Emmet.)

more detailed outline of a unilateral laceration, the rent being posterior, and Fig. 134 of a multiple or stellate rupture.

FIG. 134.



Multiple or stellate laceration of the cervix. (Emmet.)

Many cases of the varieties of cervical laceration which I have mentioned, unilateral, bilateral, and multiple, whether these be complete or partial, are obscured by hyperplasia and eversion of the endometrium,

with its glands in a condition of cystic degeneration; by areolar hyperplasia of one or both lips of the tear; and by granular degeneration going on to development of extensive exuberant growths. These can only be recognized by careful and attentive examination. For excellent delineations of these and life-like representations of them, I would refer the reader to some colored lithographs by Dr. P. F. Mundé.¹

The parts being exposed to view by the speculum, a tenaculum should be fixed in each extremity of the severed cervix and its divided walls drawn together. As they come into contact, the normal shape of this part will present itself to view and at once be recognized unless, as in Fig. 134, so much hypertrophy has occurred on the inner walls of the two sides as to render this impossible. Even then, however, an approximation to the truth may always be arrived at.

Differentiation.—The conditions from which laceration of the cervix will generally have to be differentiated are these:—

- Granular degeneration;
- Cystic degeneration;
- Simple hyperplasia or hypertrophy;
- Malignant disease.

It will often prove by no means easy to arrive at certainty until the case has been kept for some time under observation. From cancerous exuberation from the endometrium the microscope will sometimes prove the only certain method of differentiation.

Results.—Nothing more triumphantly displays the value of Emmet's contribution to gynecology in connection with cervical lacerations than a full exhibit of the evils which result from that condition. Its ordinary consequences are—

- Chronic peri-uterine cellulitis;
- Epithelioma;
- Subinvolution of a part or the whole of the uterus;
- Sterility;
- Menstrual disorders;
- Cervical endometritis;
- Granular and cystic degeneration;
- Fungosities of corporeal endometrium;
- Neuralgia of cervix;
- Dyspareunia;
- Tendency to abortion;
- Uterine displacements.

There can be, on the part of those who have been properly impressed with the importance of this lesion, no question as to the truth that all the conditions mentioned may originate from this accident.

¹ Am. Journ. Obstet. and Dis. of Women and Children, Jan. 1879, p. 134.

No part of the body of a woman is so liable to the development of cancer as the uterus; no part of the uterus so liable to it as the neck; and no tissue of the neck so liable to it as the glandular lining membrane. Exposure of this by eversion, the result of laceration, would, theoretically, be supposed to be a fruitful exciting cause of that affection, and practical observation abundantly supports theory in reference to the matter. My own observation has for several years made me feel sure of this, and that of Breiskey, Emmet, and Veit is recorded to the same effect. This alone offers a valid indication for the closure of lacerations attended by local engorgements and irritation.

Prognosis.—As time passes, the raw surfaces of the lacerated cervix may gradually become cicatrized, its evil results diminish, hyperplasia disappear, and the patient enjoy very good health, in spite of the fact that the condition still exists. This may occur without treatment, though the application of alteratives, escharotics, and astringents, as iodine, nitrate of silver, cantharides, tannin, alum, zinc, etc., unquestionably hastens and secures the result. Ordinarily the patient remains to a certain extent an invalid until the menopause, when the occurrence of atrophy of the internal genitalia effects a removal of the consequences of the laceration.

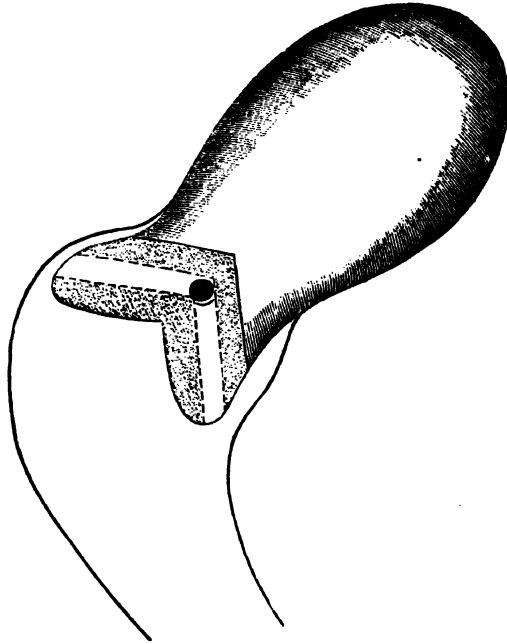
Treatment.—This may be palliative or curative, the former being appropriate to cases in which from any cause the operation of trachelorrhaphy cannot be performed. Palliative treatment consists in the use of copious hot water vaginal injections, evacuation of cervical cysts by puncture, application of alteratives, such as iodine, nitrate of silver, glycerole of tannin, removal of all superincumbent weight, and direct support of the uterus by a pessary.

Curative treatment consists in repair of the laceration by trachelorrhaphy, after the patient's general condition has been rendered good and the affected parts have been properly prepared for operation by the palliative course just mentioned.

I will describe the operation as applied to a case of bilateral laceration. The patient being anæsthetized and placed upon a table before a window, in Sims's position, his speculum should be introduced, and two tenacula fixed, one in each flap of the laceration, and they should be approximated. If this can be effected, the operator determines exactly where his denudation is to be made; if it be found to be impossible, he recognizes the fact that the case will require a special plan of treatment, which is soon to be described. Having decided where the denudation is to be made, the operator catches the lower side of one flap, and, by scissors, cuts away the mucous membrane and a small portion of the parenchyma as far as the angle made by the junction of the two flaps. Then seizing the other flap he treats it in the same way, the strip of separated tissue being now completely removed. The same process is gone through with on the other side, the resultant of both being two long raw surfaces, one on each side.

of the laceration, with a strip of undenuded tissue extending upwards to or towards the os internum. Fig. 135 will show this.

FIG. 135.



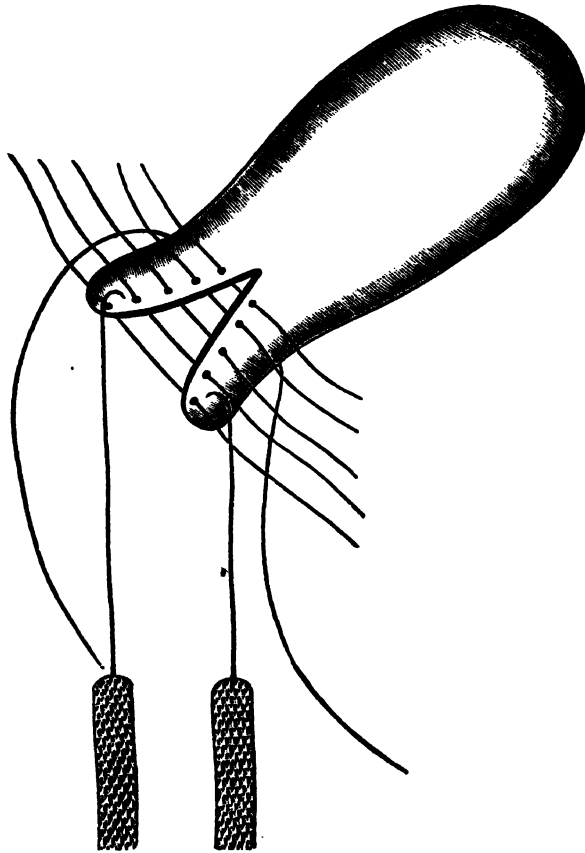
Lacerated cervix denuded, and strip of undenuded surface left to act as a cervical canal.

The flow of blood is now stanchcd, if necessary, by a tampon of linen or cotton left in place for five or ten minutes. The operator, again fixing the tenacula, ascertains by approximation of the opposing denudations that they will after passage of the sutures lie in contact with each other, and proceeds to the second step of the operation.

Fixing the tenaculum in the cervix near the upper angle of the laceration, he now passes through one flap a sharp-pointed, short needle, held in the needle forceps. The needle is introduced about a quarter of an inch from the edge of the denudation, passed through, and in the same way carried through the opposite lip. This needle is armed with a loop of silk by means of which a silver wire is drawn into place, the ends of which are placed under the finger of the person holding the speculum. One after the other wire sutures are passed from above downwards, about a third of an inch apart, until the lower extremity of the laceration is reached. Then the other side is treated, if it be a bilateral laceration, in the same manner.

The sutures are now twisted one by one, the upper ones being first dealt with, until all are twisted, when each one is bent downwards so as

FIG. 136.



Sutures passed after denudation of cervix.

to lie flat against the wall of the cervix. The conclusion of this procedure is shown in Fig. 137.

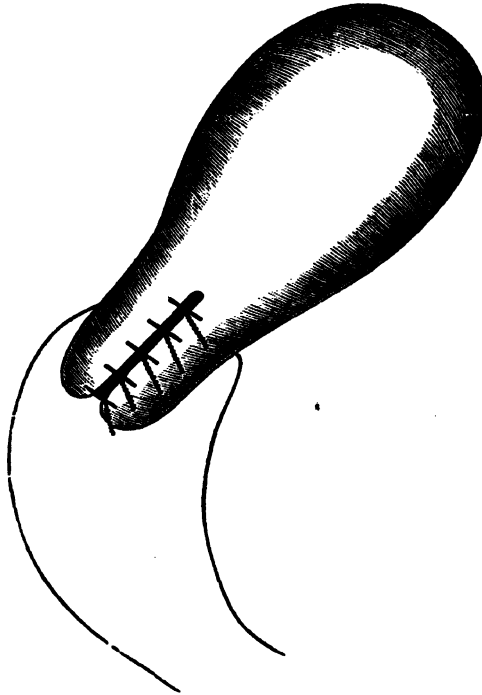
In case the laceration is multiple or stellate like that shown in Fig. 134, it is not proper to close each little fissure separately, but cutting up on each side to the vaginal junction so as to make the laceration one of bilateral variety, denuding still more so as to narrow the cervical canal, and then closing by suture as already described.

Still another class of cases must be mentioned. Sometimes hyperplasia of the inner walls of the cervix has occurred to such an extent as to prevent easy approximation of the opposing flaps, as shown in Fig. 132. Here it is necessary to cut away the hypertrophied tissue below the dotted lines, and then the cervical walls will readily come into apposition.

The patient, after the operation, should be confined to bed and kept upon low diet. The bowels may be moved every day, and the urine

evacuated upon the bed-pan. Twice a day the vagina should be cleansed by a warm, carbolized injection, and on the eighth or ninth day the sutures should be very cautiously removed beginning with those above. If union have not occurred or seem very weak, the lower ones may be left for a fortnight.

FIG. 137.



Sutures twisted and bent downwards against the wall of the cervix.

The operation sometimes, though very rarely, results in cellulitis or peritonitis, and considering the good which it accomplishes is remarkably free from risk. The use of a pessary to sustain the heavy uterus is often advisable for two or three months after recovery.

CHAPTER XXV.

GENERAL CONSIDERATIONS UPON DISPLACEMENTS OF THE UTERUS.

History.—That the earliest practitioners of medicine were familiar with this subject is abundantly attested by the writings of the Greek and Roman schools. It is distinctly mentioned by Hippocrates, and more clearly and exactly still by Galen and Moschion about the second century of the Christian era. This remark applies not only to prolapse, but also to versions, which were evidently understood. Hippocrates and Moschion even described latero-version, a variety which has not been much noticed by modern writers, and Aetius¹ in the sixth century indicates the method for reduction and retention in place of the retroverted womb. Although certain passages in the works of these old writers seem obscurely to refer to bending of the uterus upon itself, such for example as one in which Hippocrates speaks of cases in which "*uterorum os conclusum, aut contortum fuerit*," there is no satisfactory evidence that they understood the difference between versions and flexions.

Passing over many centuries, at the middle of the eighteenth we find gynecologists paying attention to versions, and even to flexions, of the pregnant uterus, but losing sight of these displacements in the non-pregnant organ. Versions were at that period described by Gartshore, W. Hunter, Jahn, and Desgranges; and flexions by Saxtorph, Wltczek, Baudelocque, and Böer. Gartshore describes a case of retroflexion complicated by retroversion, but the flexion appears to have made little impression upon him. In 1775 Saxtorph wrote an essay entitled "*De Ischuria ex utero retroflexo*," describing a case with autopsy, but the words "*orificium alte supra pubem reperi*," show that it was not a true case. About the same time Wltczek published an unquestionable case "*de utero retroflexo*," but it occurred during utero-gestation, and hence does not concern our inquiry. Both in England and France the subject of displacements attracted great attention at this period. "At this time Chopart upon his return from England, where he became well acquainted with W. Hunter, informed the Academy of Surgery what progress was being made in a subject which had attracted attention in France thirty years before."²

¹ Tetrabiblos, ch. lxxvii.

² Cusco, "*Thèse de l'Anteflexion et de la Retroflexion de l'Utérus*," Paris, 1853.

Denman was the first writer who described flexion of the non-pregnant uterus, which he did in reference to a case of retroflexion, about the year 1800. The wanting link, the description of anterior flexure, was not supplied until M. Améline, of France, described antelexions in 1827. After this many others added to the knowledge of the subject, which soon assumed its place in systematic medical literature. A great deal was done for it by the introduction of the uterine sound as a means of diagnosis and of reposition.

In carefully perusing more modern literature with reference to its contributions to uterine flexions, I am impressed with the belief that we are indebted to none more fully than to Cușco, whose very valuable thesis I have alluded to, and Graily Hewitt, whose views are familiar to all.

In this country the profession is generally indebted for correct views upon the subject to Dewees, Meigs, and Hodge. More especially has the last of these identified his name with it by important contributions to pathology and treatment.

Pathological Significance of Versions and Flexions.—The ancients ascribed to these displacements many constitutional evils, as paralysis, hysteria, etc., and even until a very recent period they were credited with a great deal of pelvic pain and functional uterine disturbance, which it was supposed almost universally attended them. Until 1854 this belief prevailed very generally, having the powerful support and endorsement of such men as Velpeau, Simpson, and Valleix. It is true that it was contested by Cruveilhier and Dubois,¹ before the period mentioned; but at that time a spirited discussion arose concerning it in the Academy of Medicine of Paris, which not only threw much doubt upon it, but gave rise to a powerful opposition, in the ranks of which appeared Depaul, II. Bennet, Aran, Becquerel, and others equally eminent. They maintained that these displacements of the womb, if unaccompanied by textural lesion, produced no constitutional disturbance; created, as a rule, no discomfort; and did not deserve the attention in treatment which had been bestowed upon them. They did not believe that the dislocation was the cause of suffering when this existed alone, but looked upon it, in such cases, as an epiphenomenon engrafted upon some important lesion. Consequently they were opposed to reliance being placed upon support by pessaries as one of the essentials of treatment, as had been done by the other school.

When views supposed to be false are repudiated, those adopting new ones are always apt to run too far into an opposite extreme, and in this instance many have done so. Scanzoni² sounds the keynote of this extreme party when he states, that "flexions of the womb do not acquire any impor-

¹ Goupil, B. & G., op. cit., p. 459.

² Op. cit., Amer. ed., p. 112.

tance, nor are followed by any serious dangers, save when they are complicated with an alteration in the texture of the organ."

The following propositions present the views upon this subject which I think will be found to bear the test of experience:—

1st. Versions and flexions of the womb may, but very rarely do, exist without causing any symptoms, for in themselves they do not constitute disease. Thus it is that in rare cases we see the uterus forced completely out of its place, without the production of morbid signs.

2d. By interfering with escape of menstrual blood, by disordering uterine circulation, and keeping up hyperæmia, by causing pressure and friction from contact with surrounding parts, and by creating a barrier to the entrance of seminal fluid, they become, as a general rule, of great importance and require special attention.

3d. Often being the results, as they are sometimes the causes, of uterine and periuterine diseases, their treatment should be combined with efforts at the alleviation of these states.

4th. Treatment by pessaries, combined with means which remove the weight of the superincumbent intestines, is of great value. By it, even although the primary disease is not affected, we may relieve one of its most troublesome symptoms, which often reacts for evil in aggravating and prolonging the affection which caused it. When the displacement has resulted from relaxation of the uterine ligaments, in consequence of increased weight or pressure from the abdominal viscera, pessaries prove a most useful and efficient means of treatment.

5th. One reason for the great prejudice existing against the use of pessaries in the minds of many is to be found in the fact that most of the enlargements of the uterus were attributed unhesitatingly to parenchymatous inflammation. Mechanically lifting an inflamed organ appeared repulsive to reason. So long as the existing inflammation was uncured, efforts appeared to be directed to a side issue, a result and not the root of the disorder. Since it is now known that what was supposed to be chronic metritis is really a vice of nutrition resulting in new formation of connective tissue, this theoretical objection falls to the ground.

6th. Another reason is this: it requires skill, and ingenuity, the result of practice, not only to do good with pessaries, but to apply them without doing absolute harm. In the hands of a physician who has made no special, or at least careful, study of their use, and who habitually applies only a half-dozen in the course of every year, pessaries are elements of absolute danger. It would be as unreasonable to expect an untaught experimenter to fit the foot comfortably with a shoe, as to hope for efficiency, comfort, and safety from a pessary applied by ignorant hands.

7th. The gynecologist who to-day assumes the position that pessaries are useless or worse, and treats uterine displacements without their aid,

will fail, by reason of the absence of other means to accomplish the existing indications, to meet the requirements of his cases.

Definition and Synonyms.—The term displacement is applied by British and American writers to any decided removal of the uterus from its normal position, without reference to the direction in which it has been moved; while French writers apply the term displacement only to ascent and descent of the uterus, reserving that of deviations for versions and flexions.

Anatomy.—One of the salient points in the comprehension of this most important subject consists in a clear understanding of the natural position of the healthy uterus. But unfortunately, owing to the fact that the position of this organ varies constantly, with inspiration and expiration, with muscular effort and quietude, and with fulness and emptiness of the bladder and rectum, it is difficult to arrive at common ground with reference to a point apparently so easy of settlement. As this chapter progresses, I propose to put before the reader a diagram of the normal position of the uterus when not influenced by any decided disturbing cause. It is the result of long and careful investigation, and represents the truth, I think, more accurately than any other with which I am acquainted.

Let any one examine a healthy uterus by means of Sims's speculum, and he will recognize that it is delicately and perfectly poised near the middle of the pelvic cavity by such supporting influences that it is never, even for a few seconds, perfectly at rest. It ascends with expiration and descends with inspiration with such regularity and distinctness, that one operating upon the pelvic viscera can, by this up-and-down movement, recognize at once when an anæsthetic is affecting respiration badly. Under the influence of more decided factors, such as pregnancy, repletion of bladder or rectum, or violent muscular efforts, still more marked changes of position occur to it. Nevertheless we must agree upon a medium position as the normal one for a healthy uterus.

The mechanical influences which sustain the uterus and preserve its pelvic equipoise are five in number. These are—

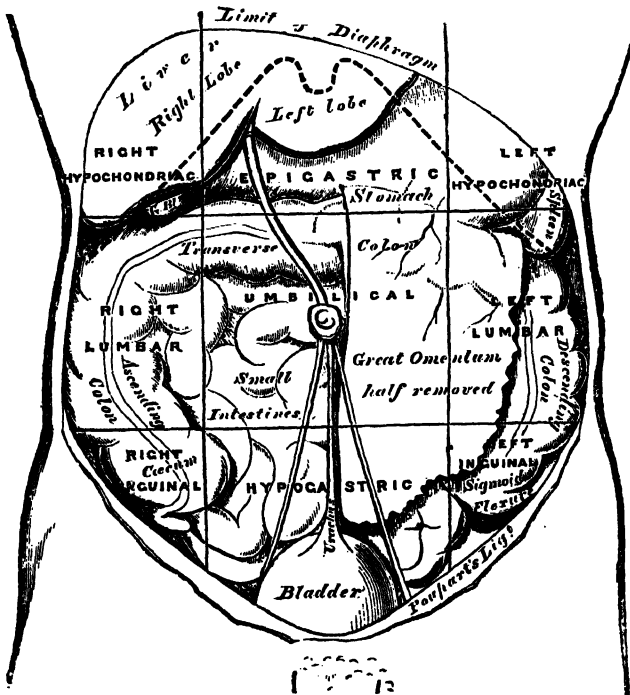
- 1st. The retentive power of the abdominal cavity.
 - 2d. The attachments to the areolar tissue of the pelvis.
 - 3d. The juxtaposition of the other organs.
 - 4th. The vaginal promontory upon which the neck rests.
 - 5th. The following ligaments :—
- a. The round ligaments, continuations of uterine tissue, extending from uterine horns to labia majora;
 - b. The utero-vesical ligaments, bands of pelvic fascia, and uterine muscular tissue passing between the bladder and the cervico-corporeal junction, where they attach themselves, and prevent retreat of cervix;
 - c. The utero-sacral ligaments, formed of hypogastric fascia, and the uterine and vaginal tissue, extending from posterior surface of cervix, passing backwards to be attached to sacrum, and preventing passage of cervix forwards;

d. The broad ligaments, folds of peritoneum inclosing areolar tissue, ovarian and round ligaments, and ovaries; preventing lateral, anterior, and posterior displacements.

None of these means of suspension are concerned in flexions and inversion, which are combated by forces of entirely different nature. The tissue of the normal, unimpregnated uterus is of such strong, resisting character in the adult female, as to prevent too great a curvature of the body upon the neck either anteriorly, laterally, or posteriorly. It is to this peculiarity of structure that immunity from these conditions is due.

When stimulated by pregnancy, the uterine tissue develops rapidly into muscular structure. This keeps the cavity of the organ closed by tonic contraction, and removes the possibility of inversion unless it be accomplished by absolute violence. But when from any cause this contractile power is destroyed and the condition of tone is replaced by one of atony, flexion or inversion may occur.

FIG. 138.

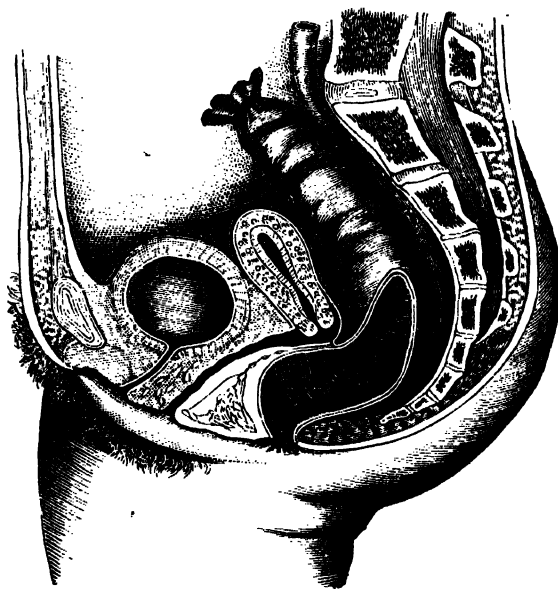


The regions of the abdomen and their contents. Edge of costal cartilages in dotted outlines. (Gray.)

The retentive power of the abdomen is one of the most important influences for the support of the uterus, and one of the most neglected in consideration of this subject. Fig. 138 represents the abdominal viscera in

their normal condition and place. The diaphragm, one of the muscles most essential to respiration, is located nearly midway in the trunk, across which it extends like a concavo-convex curtain. "Its action exactly resembles that of a piston in the cylinder of a pump."¹ As it contracts it forces the abdominal viscera downwards directly upon those of the pelvis, and as it relaxes, and expiration occurs, the depressed abdominal viscera rise to their former place, drawing the pelvic viscera upwards. This up-and-down movement not only keeps the uterus in place, but it exerts a powerful stimulating influence upon its circulation, and prevents that tendency to sluggishness which perfect quietude so markedly favors. Dr. Matthews Duncan² has very ably treated of this important subject, and done a great deal of good with reference to it; an excellent contribution has been made to it by Dr. Busey,³ of Washington; and a remarkable work has been written upon it in its various aspects by Dr. Geo. H. Taylor,⁴ of New

FIG. 139.



Normal position of the uterus.

York. In my mind its importance cannot be over estimated, for I believe that more valuable contributions to the etiology of uterine displacements in the future will come from investigations in this direction than any other.

¹ Course of Lectures on Physiology, by Prof. Küss, of University of Strasbourg, p. 294.

² Researches in Obstetrics.

³ Amer. Journ. Obstet., February, 1872, p. 585.

⁴ Diseases of Women, 1871.

Fig. 139 represents the results of my researches as to the normal position of the uterus, the bladder and rectum not being entirely empty. I shall allude in detail here to only one other factor in uterine support. The cervix will be observed to impinge slightly upon the anterior rectal wall, and to depress it a little. This a rectal examination will usually reveal as the rule. The perineal body being normal, the posterior vaginal wall will from this point be found, upon careful vaginal touch, to rise up below the cervix, which will thus rest in a very shallow well or depression, the anterior cervical wall being supported as if by a shelf, by the anterior projection of this. This anterior projection of the posterior vaginal wall is what I have styled the vaginal promontory in the enumeration of the influences supporting the uterus. Like the third factor mentioned, it is not powerful, but, like it, it is too important to be overlooked. It must be borne in mind that the support of the uterus is not accomplished by one or two powerful factors alone, but by a combination of several, each working towards a common end.

This very fact makes it manifest that a number of mechanical influences may force an organ thus sustained upwards, downwards, laterally, or even bend it upon itself or turn it completely inside out, and that the direction of the impelling force or nature of the loss of support will determine the character of the displacement. The displacements which may thus result have received the following appellations:—

- Ascent;
- Descent or prolapsus;
- Anteversión;
- Anteflexion;
- Retroversion;
- Retroflexion;
- Lateroversion;
- Lateroflexion;
- Inversion.

These varieties should not be memorized by the student, for such an effort would be uncalled for. Let him suppose any pear-shaped bag, one of gutta-percha for instance, suspended by yielding supports in a cavity, and it must be evident that these and only these changes of position could be impressed upon it.

Having said this much in a general way as to displacements, let me say a few words with special reference to uterine flexions.

Version, or turning of the uterus, signifies the fact that its long axis has changed its normal direction in the pelvis. Flexion signifies the bending of the uterus upon itself, so that a decided angle is created in its long axis. One condition is a displacement; the other a deformity in the organ. One may be likened to a dislocation of one of the long bones; the other to a fracture with angular union of the broken extremities. The

treatment of one involves merely restoration of a dislocated organ; that of the other, rectification of a deformity which may have lasted for years or may even have been congenital.

Frequency.—Flexions of the uterus, that is, displacements, anteriorly, posteriorly, or laterally, in which the decidedly predominating feature is flexion and not version, are very common.

In 339 displacements	Nonat	found 67 flexions.
" 84	" Meadows	" 54 "

As to the relative frequency of anterior and posterior flexions, the evidence is decidedly in favor of the former.

In 67 cases of flexion	Nonat ¹	found 33 anteflexions and 14 retroflexions.
" 54 "	" Meadows ²	" 20 " and 34 "
" 54 "	" Scanzoni ³	" 46 " and 8 "
" 23 "	" Valleix ⁴	" 11 " and 12 "
" 296 "	" Hewitt ⁵	" 184 " and 112 "

Out of 1670 cases of flexion collected by Ludwig Joseph,⁶ of Breslau, 1100 were anterior and 570 posterior. Out of 315 cases of flexion, Emmet⁷ found 273 to be anteflexion, 29 to be retroflexion, and 43 to be lateroflexion.

Although the results are somewhat conflicting, the preponderance of evidence very decidedly favors anteflexion over retroflexion.

One reason why we should anticipate that retroflexion would be less frequent than anteflexion, is that the natural anterior obliquity of the uterus favors the latter and opposes the former displacement. Another is the fact that the former is more thoroughly guarded against by ligamentous support; the round ligaments, running as they do from the horns of the uterus to the vulva, decidedly tending to prevent its occurrence. Not only do they do this; the uterus, being kept by them in anterior inclination, should softening of its structure occur, or any direct force be exerted upon it, naturally bends forwards.

If this be so, it may be asked why areolar hyperplasia so frequently results in retroflexion as well as in anteflexion. One reason is because the first effect of the increased uterine weight attending that disease is descent of the uterus. This relaxes the round ligaments, tends to bring the uterine axis in coincidence with that of the middle of the pelvis, and favors retroflexion. For a time the tendency is to descent and coincident retroversion. This continues until the progress of the cervix is checked

¹ Mal. de l'Utérus, p. 416.

² Am. Journ. Obstet., 1st vol. p. 176.

³ Klob, op. cit., p. 69.

⁴ Casco, Thèse, p. 35.

⁵ Dis. of Women, 2d Am. ed., p. 213.

⁶ Berlin Beiträge zur Geburtshilfe und Gynäkologie, vol. ii. part 2, 1873.

⁷ Prin. and Prac. of Gynecology.

by the utero-sacral ligaments. Then the heavy body bends, the weakened tissue yielding at the os internum, and retroflexion results. Another reason is that flexion commonly follows parturition, at which time, attacking an organ with weakened tissues and relaxed ligaments, it meets with an efficient ally in the nurse, who favors retroflexion at the expense of antelexion by zealously forcing the fundus backwards by a tight obstetric bandage.

Thanks to the researches of Coste, Pouchet, Bischoff, and others, we are to-day well informed concerning the development of the uterus. Early in embryonic life a little duct shoots out from the external surface of each Wolffian body. These pass downwards to unite and make a common canal, which becomes in time separated into uterus and vagina. Very soon a constriction appears, the neck of the uterus is formed, and becomes well developed, while a very small spot marks the point where the body is to show itself. The original canals become Fallopian tubes, and at the time of birth these, as well as the neck and body of the uterus, vagina, and other organs, have arrived at maturity. But it must not be supposed that the proportions of the adult uterus exist in that of infancy. The neck forms three-quarters of the organ, and the body, represented by a soft movable membrane, has no fixed position, but follows the bladder, if upon opening the abdomen it is drawn forwards, or the rectum, if that viscus is pushed backwards. Later in the life of the girl, even after she has reached puberty and menstruation has occurred, the uterus is curved forwards; and this anterior inflexion lasts through life, if a normal state continue, though it is generally diminished and sometimes overcome by puberty and utero-gestation.

In 1849, Velpeau, whose insight into gynecology was certainly remarkable, in a discussion before the Academy of Medicine of Paris, declared that he had so often found an anterior inflexion of the uterus in healthy women, that he was inclined to look upon it as normal. Upon this hint two of his pupils, Boullard (1852), and Piachaud (1853), with great assiduity, investigated the subject, and determined that it is so in the child and virgin; the latter basing his deductions upon 107 cases. Boullard found it to exist in 80 female fetuses, and in 27 adult females. Verneuil and Follin subsequently confirmed these observations.

That this is the normal condition up to puberty is unquestionable; nor can it be denied that to a limited degree it is so even afterwards in the unmarried female. But, as Cusco has pointed out, it greatly diminishes at puberty, unless abnormal flexion is developed. Up to this time the neck of the uterus represents three-quarters of its entire bulk, and the whole organ is an insignificant element of the human body. At this time, however, it becomes an important organ. The body develops; its walls become thick, dense, and strong; "and," says Cusco, "this is an important point, if the development is regular its walls *establish an equilibrium* ;

the uterus straightens itself; its anterior concavity disappears; and there remains only a slight depression corresponding to the bladder." Up to this period of life curvature is unquestionably due to the want of tone and power which characterizes undeveloped uterine tissue, for even when anteflexion does not exist, the organ is generally otherwise displaced. Thus, M. Soudry,¹ in 71 post-mortem examinations of infants, found the uterus anteflexed 41 times, anteverted 11 times, retroverted 15 times, retroflexed twice, and retroverted with anteflexion twice. We may then conclude from the evidence at present upon record—

1st. That anteflexion is the rule during early childhood;

2d. That it is quite frequent, in slight degree, in nulliparous women, without constituting disease.

For the prevention of versions certain pelvic ligaments are very effectual, but they have no power to prevent bending of the uterus upon itself. This is accomplished by the inherent strength and resistance of the proper tissue of the organ. Remove a normal uterus from the cadaver, balance it upon the cervix, and it will sustain itself perfectly; press it down by applying force to the fundus, and its own resiliency will cause it to erect itself immediately. Suppose a uterus to be composed of gutta-percha instead of living tissue; the material forming the walls of the neck will support the fundus when the pear-shaped bag is held by the stem or narrow part. To carry the simile further, so long as the proper tissue of the stem or neck remains normally strong, flexion will be impossible unless its resistance be overcome by direct physical force exerted by pressure or traction. But if some influence be brought to bear locally, so as to soften the part sustaining the fundus, it is evident that, as the gutta-percha walls grow weak, there may be a flexion of the fundus from its own weight. It will be said that these views represent the uterus as supported by the vagina, and leave out of consideration the broad ligaments which sustain the fundus. If these ligaments were tightly drawn cords, I could admit their action, but as they are merely lax folds which are not made tense by the bending of the uterus upon itself, I do not do so.

A corroboration of this view is found in the frequency of flexions in the uteri of the aged which have lost tone and strength. "In aged women," says Klob,² "with exceedingly relaxed uteri, the pressure of the intestines upon the posterior surface of the organ is sufficient to cause anteflexion."

Pathology.—Flexions may be congenital or accidental. As the opposite walls develop, an excess of nutrition may be appropriated by one, which grows rapidly, while the other developing more slowly arrests the erection of the uterus, and, giving it an inflexion, creates a concavity on one side and a convexity on the other. If the posterior wall develop most decidedly, an anteflexion results; if, as was the case in nineteen out of M.

¹ Aran, op. cit., p. 981.

² Op. cit., p. 61.

Soudry's seventy-one autopsies of infants, posterior displacement exist, and the anterior wall receive the chief amount of nutrition, a retroflexion is the consequence. But not only does the excessive growth of one wall create an inflexion on the opposite side; the side which is bent undergoes to a certain extent atrophy, and this increases the already growing disproportion. This, in all probability, is the source of congenital flexion, a condition always exceedingly difficult of cure, but fortunately one which does not create as much corporeal congestion and constitutional disturbance as the more remediable form which is accidental.

In the supplement to the second volume of Herbert Spencer's work upon Biology, appear some remarks upon the influence of prevailing winds upon the growth of trees, which are interesting in this connection. The tree, says he, being habitually bent in one direction, its nutrition is, on the concave surface, impaired, the ligneous material upon the convex portion is deposited in excess, and in consequence the heart of the tree is not central, but considerably nearer to the concave than to the convex surface. Upon experimenting upon growing twigs by bending them to one or the other side, he found that he could uniformly produce the same result. When the uterus is flexed, a similar change will be found to occur from a like cause.

Congenital antelexion is much more common than congenital retroflexion. Cases of the latter are, however, by no means unknown. Boivin and Dugès¹ report two cases, Dubois one, Deville one, and Bell one in a very young girl. I have several times met with it.

Any influence which weakens the tissue constituting the uterine walls, creates flexion. If the posterior wall be chiefly affected, the body falls backwards; if the anterior, it inclines forwards; if both, the direction of inclination is decided by extraneous forces. Rokitsansky has proved that such weakening is accomplished by endometritis, which creates an inward growth of the utricular glands into the submucous connective tissue, near the os internum, which in consequence undergoes atrophy and enfeeblement; or by cystic degeneration in the cervical glands, "which, from their increased size and subsequent pressure, cause the submucous stratum to become atrophied, and which ultimately bursting, thereby cause a collapse of tissue in the formerly dense framework of the uterus, leaving in its place a flaccid net-like areolar tissue incapable of sustaining the organ in its normal position." Both these occurrences, says Klob, take place quite frequently. Rokitsansky says that in the anterior semicircle of the uterine tissue around the os internum of women who have borne many children, a large transverse vein is found, which, by its removal of tissue, weakens the wall.

But there are other influences which may accomplish this result:

¹ Cusco, *op. cit.*, p. 34.

abscess of the uterine tissue; development of fibroids which disorder the bloodvessels; varicose degeneration of the veins and sponginess of tissue engendered by prolonged traction upon the neck; disturbance of nutrition by flexure created suddenly by a blow or fall, or gradually by traction from false membranes; subinvolution, or areolar hyperplasia, which accomplishes, on a large scale, the substitution "for the dense framework of the uterus of a flaccid, net-like areolar tissue, incapable of sustaining the organ," which Rokitsansky declares occurs at the os internum in cystic degeneration.

This loss of power in one or both walls of the uterus is frequently, though not universally, the cause of flexions of accidental character. They are sometimes due to force sufficiently strong to overcome the resisting power of the uterine tissue, either suddenly or by slow degrees. Once flexed, one wall soon undergoes degeneration, and thus two causes for a continuation of the condition are combined.

The point of greatest weakness is the point at which flexion occurs, and this is usually opposite the os internum. In ante flexion it may occur below this point, when the neck only is flexed, from prolonged and habitual constipation. In both retroflexions and ante flexions I have known it to occur at the middle of the body, and escape superficial examination, or induce a belief in the existence of fibrous tumor. Klob has noticed this but once, and has failed to find an analogous instance. Cusco¹ records one case in his own experience where the body was equally divided by a flexion, and quotes Ashwell and Bell for others of similar character.

These are the influences under which flexion is induced. No sooner does it occur, than a marked change takes place in the uterine circulation. The uterine bloodvessels arise from the *arteria uterina hypogastrica*, the *arteria uterina aortica*, and from the *arteria spermatica externa*.² The veins make up by their union two plexuses, the uterine and pampiniform. All these vessels go to and come from the uterus at its sides. A flexion of this organ to a certain extent ligates these vessels, as Hewitt expresses it, and interferes with circulation directly and immediately. The incompressible arteries still carry blood to the body, but the compressible veins fail to return it to the general circulation, and the consequences are congestion, œdema, and, in time, hypergenesis of tissue. This important fact Hewitt, in his recent admirable edition of his work upon Diseases of Women, lays so much stress upon, as to make it the pivotal point of his pathological creed. There can be no question of the truth of this view, nor of its extremely important pathological bearing. In bringing it prominently forward, and insisting upon its frequent and striking effects as a factor in uterine disorders, Hewitt has, in my judgment, done a great deal of good. He is in error, however, in supposing that it had

¹ *Op. cit.*, p. 37.

² Stricker's Manual of Histology.

previously been unrecognized, as the following passage from his work announces: "It is somewhat surprising that the occurrence of mechanical congestion of the body of the uterus, arising from mere change of shape of the organ, as above pointed out, should not have attracted the attention of uterine pathologists." Since the appearance of Klob's work on *Pathological Anatomy*, published in 1868,¹ it had especially attracted my attention, and had constituted a prominent feature in my teachings. Klob² declares that "a further consequence of venous hyperæmia, arising from hindered reflux of blood at the point of flexion, is œdema with tumefaction and genuine hypertrophy of the body of the uterus. The reflux of blood from the uterine to the hypogastric veins is interrupted, and in consequence of the collateral hyperæmia, frequently a very considerable dilatation of the plexus pampiniformis takes place, because the blood can now only flow through the spermatic vein." Under this mechanical influence both neck and body become tumid, tender, and painful; the mucous lining is so congested as to give forth excessive amounts of mucus and blood; and the tissues of the organ, excited to excessive growth by prolonged blood stasis, undergo in time marked hypergenesis.

At the point of flexion the cervical canal is always more or less closed by apposition of its walls. From this cause the ingress of fluids is prevented, and sterility commonly results, and the egress is interfered with to such an extent that dysmenorrhœa, hematometra, hydrometra, and accumulations of mucus take place. Of course such accumulations cannot occur with impunity; they result in the production of endometritis and even in hœmatocele by regurgitation.

In congenital flexion the circulation of the uterus is so gradually interfered with that marked congestion is not so likely to occur as it is when the organ is suddenly bent upon itself, nor is occlusion of the cervix ordinarily so complete.

Results and Complications.—Already the reader can enumerate for himself many of the consequences arising from flexion of the uterus; and a list of them placed before him will need little further explanation as to the mode of their production. They are the following:—

- Congestion;
- Hypergenesis of tissue;
- Sterility;
- Dysmenorrhœa;
- Menorrhagia;
- Endometritis;
- Tendency to abortion;

¹ Howitt's views were first published in an article read before the British Medical Association at Leeds in 1870.

² *Op. cit.*, p. 60.

Hematocoele ;
 Ovaritis and Salpingitis ;
 Pelvic peritonitis ;
 Fluid accumulations in utero ;¹
 Uterine neuralgia ;
 Cystitis and Rectitis ;
 Granular degeneration.

When it is remembered that each of these affections sets up symptoms and complications of its own, it will be appreciated that flexion of the uterus is a disorder which, apparently insignificant in itself, is the source of many grave results.

Deranged uterine circulation produces menstrual disorder. Usually this consists in excessive flow, but sometimes the opposite condition exists.

Ovarian congestion, neuralgia, and enlargements, as, likewise, catarrh of the Fallopian tubes, are probably due to a reflex influence transmitted through the intimate and sensitive nervous connections between the uterus and these organs. Rigby attributed them to pressure, but this does not appear to account for those conditions.

Peritonitis results from pressure and friction by the displaced fundus, and, in some cases, from reflux through the tubes of imprisoned fluids. It is by no means rare; so common is it, indeed, that Virchow regards traction by false membranes as the chief cause of antelexions. That this pathologist is in error upon this point is the belief of all others with whose views I am familiar.

Etiology of Uterine Displacements.—Both in didactic and clinical teaching I have for many years grouped the causes of uterine displacement in the manner about to be described. Enlarged experience with the method leads me to regard it with increased favor, and I would urge its claims to adoption, by teachers and students. By it no influence producing displacement escapes classification, and it induces him who employs it to arrange the subject systematically in his mind.

The general causes of uterine displacement may thus be tabulated:—

- 1st. Any influence which increases the weight of the uterus ;
- 2d. Any influence which enfeebles the supports of the uterus ;
- 3d. Any influence which displaces the uterus by pressure ;
- 4th. Any influence which displaces the uterus by traction.

To state this more fully in other words:—

1st. The uterine supports are equal to sustaining the organ when of normal weight; but when its weight is increased they naturally fail in their task.

2d. Even if the uterus be no heavier than it should be, it may become

¹ Kiwisch reports a case of hydrometra.

displaced from depreciation of that support to which it is entitled, and which was made to sustain it.

3d. If both the uterus and its sustaining powers be perfectly normal, it is evident that direct or powerful pressure may overcome the latter, and force the organ from its place.

4th. It is equally evident, that, as, by a tenaculum fastened in the uterus of the cadaver, we may drag it from its position, so may contracting lymph or a prolapsed vagina effect this in a living body.

All these facts having been premised, a concise view of the special causes of displacements may be thus presented.

1. *Influences increasing weight of uterus.*

Congestion ;
Tumors in the walls or cavity ;
Pregnancy ;
Excessive growth of any of its component parts ;
Subinvolution ;
Fluid retained in cavity ;
Masses of cancer or tubercle.

2. *Influences weakening uterine supports.*

Rupture of the perineum ;
Weakening of vaginal walls ;¹
Stretching of uterine ligaments ;
Want of tone in uterine tissue ;
Degeneration of uterine tissue ;
Abnormally large pelvis ;
Any influence impairing sustaining power of abdomen.

3. *Influences pressing the uterus out of place.*

Tight clothing ;
Heavy clothing supported on the abdomen ;
Muscular efforts ;
Ascites ;
Abdominal tumors ;
Abscesses or masses of lymph.
Repletion of the bladder.

4. *Influences exerting traction on the uterus.*

Lymph deposited in pelvic areolar tissue ;
Lymph deposited on peritoneum of pelvic viscera ;
Cicatrices in vaginal walls ;
Shortening of uterine ligaments ;
Natural shortness of vagina ;
Prolapse of vagina, bladder, or rectum.

¹ Such weakening from subinvolution or any other cause destroys the supporting power of the vaginal promontory.

The mode of action of each of these causes is so evident as to require no special mention at this time, but they will be particularly alluded to hereafter.

No circumstance combines so many of these causes of displacement as utero-gestation and parturition. Should involution follow these without interruption, no tendency to displacement results. But the process of involution is frequently interfered with. Then, as consequences of the arrest of retrograde metamorphosis, the uterus remains large and heavy; the vagina voluminous and feeble; and the uterine ligaments, which owe their strength chiefly to the uterine tissue which they contain, lax and weak. As a result of parturition, too, the perineum is often enfeebled, which allows of prolapse of the vagina, which produces traction upon the uterus.

These remarks apply to true displacements of the uterus. To flexions or deformities of the organ itself, they do not so sufficiently apply as to render uncalled for some special remarks, which I now proceed to offer.

Predisposing Causes of Uterine Flexions.—Any cause which predisposes to enfeeblement of uterine tone, to the development of a force which overcomes this even when unimpaired, or still more one which combines the two evil influences, prepares the way for flexure of the uterus under the impulse given by a sudden or persistent exciting cause. They may be thus enumerated :—

- Parturition ;
- Impoverishment of the blood ;
- Enfeebled nerve state ;
- Extreme youth or age ;
- Laborious occupation ;
- Relaxation of abdominal walls ;
- Influences altering pelvic axes.

Exciting Causes.—One of the functions of the cervix uteri is to support the body, and for the performance of this it is abundantly competent, unless its powers be impaired by one of the following influences :—

Influences weakening uterine support.

- Endometritis ;
- Cystic degeneration near os internum ;
- Pregnancy ;
- Fatty degeneration ;
- Areolar hyperplasia ;
- Vascular degeneration in uterine walls.

Influences increasing the weight of the fundus.

- Enlargement of the body ;
- Pregnancy ;
- Tumors ;
- Accumulation of fluid in utero.

Influences pushing the fundus or cervix forwards or backwards.

Abdominal or pelvic tumors ;

Ascites ;

Fecal accumulation ;

Tight clothing ;

Muscular efforts.

Influences exerting traction forwards or backwards.

False membranes from pelvic peritonitis.

Of the first class of causes, inflammation affecting the mucous membrane of the neck and creating areolar hyperplasia in the parenchyma is, according to my experience, one of the most frequent. The hyperplasia thus arising results in atrophy of the muscular and submucous fibrous structures of the uterus and their replacement by hypertrophied areolar tissue, and produces a marked tendency to this deviation by thus substituting a lax and feeble for a dense and powerful substance. Klob declares that this replacement of strong tissue by that which is weaker occurs more especially near the os internum. Virchow denies the agency of this condition as a causative influence, as he likewise does that of fatty degeneration, observed by Scanzoni, at the point of flexure. The influence of parturition, abortion, and pregnancy has been admitted by all authorities.

The varieties coming under the head of the second set of causes are all universally admitted, as are also those belonging to the third. Fecal impaction may possibly produce flexion of the body, and frequently causes the cervix to bend sharply forwards. The fourth set of causes is put beyond question, by the fact that in autopsies the uterus is often found thus bound in a state of flexion.

The etiology of cervical flexion is somewhat different from that of corporeal. It is, I feel satisfied, generally induced by pressure directly exerted upon the uterus by tight clothing, which forces it against the concave surface of the vagina. This surface gives the impinging part a slant forwards, and keeps it thus bent. Habitual constipation increases this vicious curve, and the two causes combined often result in this unmanageable form of the affection. This explains the fact, which all must have noticed, that in pure corporeal flexion the uterus is often high up in the pelvis, while in that of cervical form it is almost invariably low down. It likewise explains what my observation leads me to regard as a fact, that in nulliparous women the cervical and cervico-corporeal varieties preponderate in frequency over the corporeal form, which is generally met with in multiparous women.

There is still another pathological element which enters into the etiology of cervical flexions, and explains the phenomena with regard to them which I have just mentioned. The uterus being forced downwards by influences exerting themselves upon the abdomen, if the utero-vesical ligaments be lax and yielding, corporeal flexion will occur, the cervix

retreating under pressure. If, however, these ligaments keep the cervix in close contact with the bladder, cervico-corporeal or pure cervical flexion will be developed. Parturition does more to stretch these ligaments than anything else, and thus cervical flexion is not so generally met with in women who have gone through that process as in those who have not. Corporeal flexion is the variety seen after parturition; the cervical and cervico-corporeal forms, those which we see in nulliparous women. Not only is this fact interesting in reference to pathology; it has an important bearing upon the treatment of cervical flexions. He who would treat these cases successfully must systematically stretch the ligaments which keep the cervix in an anterior position, and by this means strive to change the form of displacement to that of corporeal flexion, or of anteversion.

Retroflexion is most frequently the result of some influence which weakens the tone of the uterine walls, but, even when this is normal, any force directly applied may displace it and produce a flexure, whether such force is developed suddenly or gradually.

We have now pursued the study of flexions, as a whole, as far as it is profitable to do so; and from this point, they shall be considered under separate heads.

The uterus may be flexed upon itself anteriorly, posteriorly, or laterally, giving rise to the disorders known as—

- Anteflexion;
- Retroflexion;
- Latero-flexion.

The fundus in falling forwards or backwards does not always preserve the median line, but commonly falls obliquely to the right or left. This obliquity is frequently created, even where the median line was originally preserved, by the use of a pessary, and constitutes so prominent a difficulty in these cases that I employ a special instrument for its treatment.

Thus we may find a uterus flexed forwards and laterally; backwards and forwards; backwards and laterally, etc.

These varieties are known as—

- Retro-anteflexion;
- Retro-lateroflexion;
- Ante-retroflexion;
- Latero-anteflexion, etc.

The student need not memorize these, but, merely keeping in mind the fact that such combinations are possible, he will readily recognize them at the bedside if he have mastered the three chief forms.

This is all that need be said upon the subject of uterine displacements in general. I shall now proceed to complete the outline here sketched, and to go into the details connected with each variety of the affection.

CHAPTER XXVI.

ASCENT AND DESCENT OF THE UTERUS.

Ascent of the Uterus.

IN its normal condition the uterus descends into the pelvic cavity so as to assume a position about two inches from the vulva. If its weight be augmented, it comes much lower than this, and continues to do so as its volume increases, until its development becomes so great that it cannot be accommodated by the pelvis. Then it escapes from the cavity by ascending to a more capacious space above the superior strait. This change occurs in every normal pregnancy. During the first three months the uterus falls in the pelvis, being in a state of prolapse. As the fourth month approaches its volume becomes so great that it can no longer be retained in the pelvic cavity, and then it escapes above the superior strait where sufficient space is afforded for it to undergo full development. This is not only so in pregnancy; the uterus is similarly affected by morbid growths. When, under these circumstances, it leaves the pelvis, the fact is expressed by the term ascent.

Ascent of the uterus is never an original disease, but the result of some important change connected with that organ, and requires merely a mention. It may occur whenever a tumor is developed in connection with the vagina, rectum, or recto-vaginal cul-de-sac, when there exists a growth in the walls or cavity of the uterus which renders it too large for accommodation in the pelvis, or, when an abdominal tumor draws up the uterus. It never requires treatment, and is of importance only as exciting suspicion of pregnancy, or as an evidence of morbid growth in some way connected with the organs of generation.

Descent or Prolapsus of the Uterus.

Definition, Synonyms, and Frequency.—The name of this disorder defines its character with sufficient clearness. It is of frequent occurrence, and under the name of Falling of the Womb is well known to women, and constitutes for them an object of especial dread. As almost all women, after the period of fruitfulness has passed, have an intuitive fear of cancer of the uterus, so do a large number before that time manifest an apprehension of prolapsus. In the one case the anxiety is for life, in the other for usefulness and comfort.

Unfortunately for the student of this subject, its nomenclature has been

rendered somewhat obscure. By some, all cases of prolapsus in which the uterus does not escape from the vagina are termed incomplete, while those in which it does are styled complete. By others, complete protrusion is denominated procidentia; and, by others still, a very slight descent without alteration of direction of axis has been designated by the very old name of squatting uterus. I have striven to simplify the matter by applying the name prolapsus to all, and marking the degrees of descent by the terms 1st, 2d, and 3d.

Anatomy.—Those uterine supports which are especially active in preventing uterine descent are the surrounding areolar tissue, which binds it to the bladder, the rectum, and the pelvic walls; the utero-vesical and utero-sacral ligaments; and the retentive power of the abdomen. About the sustaining influence of the vagina there is much difference of opinion; some, like Savage, denying it; while others, like Bennet, West, and Kiwisch, maintain it. My opinion is, that the promontory formed by the vagina in front of the cervix certainly effects something in the way of support, although observation has led me to modify very much the belief which I once had in the general sustaining influence of the canal. Loss of tone in it, resulting in prolapsus vaginae, is commonly attended by a similar prolapse in the uterus, but it does not follow that the uterus falls from want of support; it is more probably dragged down by the heavy vagina. This view may be sustained by so many strong arguments that it need not invoke weak ones. A good deal of stress has been laid upon an experiment for which Aran credits Stoltz; that of cutting the vagina away without noting any descent of the uterus. A little reflection must show that this proves almost nothing. It merely demonstrates the fact that, without the vagina, other supports are sufficient to sustain the uterus. No one has ever maintained that the vagina was the only support which keeps the uterus up, nor that others were insufficient without it.

A great deal of support is unquestionably derived from the connective areolar tissue, which so closely unites the uterus with the rectum, bladder, and pelvic walls, as to involve displacement of these viscera in its descent. Dr. Savage, dragging the uterus of a cadaver forcibly downwards by means of a vulsellum attached to the neck, found that after cutting its important ligaments, and overcoming by force the action of the vagina, it still would not advance. "The obstruction was found to be due to the subperitoneal pelvic cellular tissue, particularly where it surrounds and accompanies the uterine bloodvessels."

The most important factors in the prevention of prolapse are the utero-sacral ligaments, which Aran considered the only real ligaments of the uterus. Arising from the point of junction of neck and body, they usually embrace the rectum in their bifurcation posteriorly, and, diverging on each side of it, terminate in the subperitoneal cellular tissue, as high up as the second lumbar vertebra. They are exceptionally inserted into the rec-

tum. It was the recognition of this anatomical arrangement of these important ligaments which led Huguier to suggest that they be called uterolumbar, instead of utero-sacral. They consist of the following elements: peritoneum, pelvic connective tissue, uterine cortex, and vaginal muscular fibre. Their influence, as likewise to a much less degree that of two similar bands connecting the cervix in front with the bladder, cannot be doubted.

These are probably all the factors which unite in the prevention of prolapsus in the first and second degrees. When they are entirely overcome and the descent has become complete, the round and broad or lateral ligaments come into action, but not until that has occurred.

Varieties.—This displacement may occur very suddenly and unexpectedly, or gradually and by successive steps. As the symptoms of the two varieties differ only in the rapidity and severity of their development, and the second is much the more frequent, I shall direct my remarks chiefly to it, and describe the first in a few words in an appropriate place.

Prolapsus may exist either in the first, second, or third degree, the direction of the uterine axis in each of which is exhibited in Fig. 140.

In the first the uterine axis is bent forwards, the organ being somewhat anteverted and sunk in the pelvis. In the second the body has gone towards the sacrum, the cervix having come down to the ostium vaginæ. In the third the last barrier has been overcome, and either a part or the whole of the uterus hangs between the thighs.

Causes.—The causes which predispose to this accident are—

- Child bearing;
- Laborious occupations;
- Advanced age;
- Habitual constipation.

I know of no way in which I can give so concise a summary of the exciting causes of prolapsus as by a reference to the classification to which I have already referred under general considerations upon displacements; for the exciting causes will be found to belong in every case to one of four classes: those increasing uterine weight; those enfeebling uterine supports; those forcing the uterus down by power applied above; and those drawing it down by traction from below.

a. Examples of causes connected with increased uterine weight:—

- Tumors, submucous, subserous, or mural;
- Pregnancy, (rare, but sometimes met with);
- Hypertrophy or hyperplasia;
- Retained fluid.

FIG. 140.

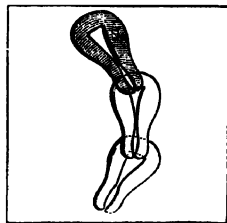


Diagram representing the uterine axis in the three degrees of prolapsus.

b. Examples of causes connected with enfeeblement of uterine supports:—

Abnormally capacious pelvis;
 Destruction of power of the perineum;
 Loss of tone in vaginal walls;
 Loss of tone in uterine ligaments;
 Absorption of fat from pelvic areolar tissue;
 Atony of abdominal muscles;
 Diminution of power of respiratory muscles.

c. Examples of influences forcing the uterus downwards:—

Violent coughing;
 Tumors in abdomen;
 Ascites;
 Violent muscular efforts;
 Tight and heavy clothing;
 Straining at stool.

d. Examples of influences dragging the uterus down:—

Congenital or acquired shortness of the vagina;
 Prolapse of vagina, bladder, or rectum;
 Uterine prolapsus.

I have already stated that these evil influences are most completely combined in the condition existing after parturition, when the uterus is heavier than normal, the recently distended vagina relaxed and feeble, the uterine ligaments very much stretched, and the sphincteric muscles of the vagina weakened. When, as so often happens, rupture of the perineum and of the cervix uteri occur, and are followed by subinvolution of vagina, uterus, and uterine ligaments, we have in perfection all the conditions which give rise to this displacement. Of all the causes of prolapsus this combination is the most frequent, and hence the difficulties attending cure. It is for this reason that prolapse is found to be rare in women who have never borne children, less rare in those who have borne one only, and appears to increase in frequency in proportion to the frequency of the parturient process. Scanzoni reports that in 114 cases of prolapsus 99 occurred in women who had borne children. Even the most complete prolapse, however, will sometimes be met with in young and unmarried women. Within the past five years I have met with three such cases, one in a virgin of nineteen, one in an old maid of about sixty, and the third in a healthy, laboring woman at the menopause.

Next in order of frequency will be found a condition which occurs in old women, a loss of vaginal power from atrophy of the vagina, and absorption of the padding of fat which normally occupies parts of the pelvis, and helps to aid that canal in sustaining the uterus. This condition has been specially mentioned by some of the German pathologists, and attention has been called to its importance by Dr. Barnes, of London. Here,

although the uterus is atrophied, it descends in spite of its lightness, partly from loss of support from the vaginal promontory and partly from traction exerted upon it by the prolapsing vaginal walls.

An important position as a pathological factor is assumed by loss of the retentive power of the abdomen. Want of exercise except in walking induces in women very commonly an atonic condition of the thoracic and abdominal muscles; and the respiratory act therefore becomes inefficient, and the piston function of the diaphragm feeble and imperfect. As a consequence of this failure, the uterus rises in the pelvis at each expiration less perfectly than it ought; its circulation, lacking the stimulus of the abdominal rise and fall, becomes sluggish; gradually it settles lower and lower in the pelvis, and becomes a readier prey to the action of other malignant influences.

Relaxation of the abdominal walls probably also favors displacement by effecting an alteration of the direction of pressure transmitted to the uterus, bladder, and superior vaginal wall, and by permitting the free entrance of intestines into the anterior peritoneal prolongation or anterior uterine excavation.

Increased uterine weight and pressure from above are so plainly active in creating prolapsus, that no one will doubt their causative influence. By its instrumentality we see complete prolapsus occur with ovarian tumors, ascites, etc.

Pathology.—There is no variety of displacement about the pathology and mechanism of which gynecologists are more at variance than this, and yet none to which a greater amount of honest, scientific labor has been applied for the elucidation of these very points. As examples, I may cite the experimental researches of Aran,¹ Legendre,² Huguier,³ Savage,⁴ and Taylor,⁵ to which the seeker after more elaborate data is referred.

My limited space will not permit me to go fully into the views of these investigators, and I shall confine myself chiefly to a rather dogmatic statement of my own opinions, at the same time acknowledging that they are, in great extent, founded upon the investigations alluded to.

It matters not whether the original cause of the displacement be increase of uterine weight, depreciation of sustaining power, or direct force exerted upon the organ from above or below; an invariable result of its existence is diminution of the power of the uterine supports. The ligaments are stretched, the vagina distended and doubled upon itself or everted, and the contractile power of the sphincteric muscles impaired.

¹ *Etudes Anatomiques et Anatomo-pathologique sur la Statique de l'Utérus*, Paris, 1858, Archiv. Gén. de Méd.

² *De la Chute de l'Utérus*, Paris, 1860.

³ *Les Allongements Hypertrophiques du Col de l'Utérus*, Paris, 1859.

⁴ *Female Pelvic Organs*, London, 2d ed., 1870.

⁵ *On Amputation of the Cervix Uteri, etc.*, New York, 1869.

The displaced organ is generally affected by congestion and inflammation of the mucous lining, its cavity is much enlarged, and solutions of continuity occur upon the cervix. The vaginal rugæ are effaced, and the lining of the canal, exposed to atmospheric influences and friction, looks like the cicatrized surface of scalded skin rather than mucous membrane.

"The tension of the aponeurotic fibres of the broad ligaments," says Legendre, "during uterine prolapse, results in compression of the hypogastric veins, as compression of the veins of the neck occurs, from tension of the cervical fascia, when the head is forcibly thrown backward. In this way congestion of the uterus and other pelvic organs is kept up." Prolapsus, from its influence in thus producing hyperæmia, is usually attended by hyperplasia of the areolar tissue of the uterus. This organ undergoes an absolute increase in size, and the tissue of the cervix is especially altered. Simultaneously with hyperplasia, there is varicose degeneration of the bloodvessels of the cervix and absorption of its proper tissue. This increases the natural ductility of the part, and upon any traction being applied it stretches so as to produce the phenomenon of variation in the length of the uterus, mentioned under the head of physical signs. The walls of the vagina are found much thickened by proliferation of epithelium and hypertrophy of the submucous layers of areolar tissue. Thus it becomes not only more capacious, but heavier and more voluminous than normal, and even if its increase in volume and weight are consequences of uterine displacement, it drags upon the uterus and increases its tendency to descend.

The uterus may descend from its normal place in the pelvis under any one of the four influences which have been mentioned. It must not, however, be supposed that one only is usually active. On the contrary, two, three, and even four are often combined in furthering the result. For thoroughness of study they are examined apart, that course being also chosen from the fact that even if several causes are combined, one is usually especially prominent as a factor.

If a careful clinical study be made of this interesting subject, the uterus will be found to descend in one of these ways:—

1st. A woman who has previously been in good health begins to complain of dragging about the loins, backache, and sense of fatigue about the pelvis. An examination is made, and the uterus is found resting upon the floor of the pelvis, its axis little altered. There is no rupture of perineum, no redundancy of vagina, and the habits of life of the patient preclude the possibility of muscular efforts or tight clothing being agents in the condition. A careful examination of the displaced uterus shows it to be large and heavy from subinvolution, or discovers a fibrous tumor in its structure. The natural supports have been perfect, but they have been overtaxed and have yielded. Increased uterine weight is the prime mover in the disorder.

But keep this case under observation. The descent already effected has drawn down the bladder, caused pressure upon the rectum, established a hyperæmia in the tissues of the vagina, and begun already to rob the uterine ligaments of their power by stretching them. Pressure on the rectum and dragging upon the bladder create irritation, the patient "bears down" in evacuating these viscera, and a new influence is developed: force from above. Very soon congestion of the vagina results in excessive areolar growth, this canal falls into its own distended channel, and another evil influence is the result: traction upon the uterus from below. The uterus has now descended so that its os projects between the labia majora; if its ligaments were stretched before, how much more so must they be now!

2d. A uterus is found in the first degree of prolapsus. It is a healthy uterus, normal in size, weight, and consistency. Its supports appear perfect, and no influence exerts traction upon it from below. Everything is normal, but one—the uterus has descended. Examination proves that this woman has labored hard, lifting heavy weights, and placing herself in a constrained attitude to do so; or she has for weeks suffered from a spasmodic, violent cough; or from obstinate constipation which has caused tenesmus. The cause of the prolapse is evidently force applied to the uterus from above. But this remains the sole cause for a short time only. Very soon increased weight of the uterus from congestion, enfeeblement of uterine supports from prolonged tension, and traction by falling of the hypertrophied vagina and prolapsed bladder complete the vicious circle.

3d. An examination of the uterus in a case exactly similar as to symptoms, demonstrates no increase of uterine weight, no force applied from above. The woman is found to have a justo-major pelvis, which has always resulted in precipitate labors; or she is past sixty, and a senile atrophy is developing; or the perineum is ruptured, and the anterior and posterior vaginal walls are protruding in egg-like pouches at the vulva, not sufficiently to drag upon the uterus, but enough to shorten the vagina by allowing its distal end to protrude, and thus the vaginal promontory is removed. The mischievous factor is loss of uterine support. The uterus is normal in weight and exposed to no evil influences from pressure or traction, but its feeble supports even then are unfit for their functions, and the uterus falls. It descends to the second degree, and, dragging upon the broad ligaments, their aponeurotic expansions compress the hypogastric veins, great congestion results, and at once a new influence develops—increased uterine weight. Now rectal and vesical tenesmus and pressure by the displaced abdominal viscera add another untoward element—force applied from above. And as the descending uterus everts still further the congested, voluminous, and heavy vagina, it drags the offending organ still more rapidly down.

4th. The reader wearied by repetition may crave a respite here, but he

asks it just where it cannot be granted, for we come to the consideration of the most frequent and consequently most important of all the influences resulting in prolapsus uteri. Prolapse of the uterus is sometimes a primary affection, but in the great majority of cases it is secondary, produced by prolapse of the vagina, which literally drags it from its position. There are two methods in which this occurs: 1st. The perineum is ruptured, and by this the vaginal walls lose the buttress against which they rest, and the power of the pubo-coccygeus muscle is diminished. 2d. A vagina developed by utero-gestation does not undergo involution, but remains a large, voluminous, and heavy bag, the redundant walls of which overcome the resistance of the perineal body and prolapse, dragging the uterus down, either before or simultaneously with their escape from the vulva.

Dr. Duncan, in an essay read before the Edinburgh Obstetrical Society,¹ in 1871, maintained that the perineum had nothing to do with the support of the uterus, and that, therefore, laceration of this part is not a cause of prolapsus. I do not believe that the perineum supports the uterus directly, nor that upon the cadaver its section would result in prolapsus; but I believe that destruction of the perineal body which acts as a support to the vagina results in loss of support to both its posterior and anterior walls. These prolapse, their tissue becomes hypertrophied, and they drag down the bladder and then the uterus. Look at Fig. 56 and see how much support vagina and bladder obtain from the perineal body, and the results of its rupture may be better appreciated. So long as the vagina is normal in volume and weight, and remains within the pelvis with its walls in apposition, it constitutes, by its ante-cervical projection, I think, a uterine support. So soon as it falls from the pelvic cavity, becomes hypertrophied, and has its walls separated, it not only loses this power, but degenerates into a uterine tractor.

The same authority points to the fact that many cases of complete perineal laceration do not produce prolapsus uteri. This is true. Such laceration is usually the result of parturition, and is, I am satisfied, often a cause of subinvolution of the vagina. If this condition has resulted, the laceration is very generally followed by prolapsus vaginæ, and thus by descent of the uterus. If vaginal involution have not been interfered with, it is usually not so.

Aran points out the fact, that removal of the vagina from the cadaver does not produce uterine prolapse, and Dr. Duncan declares, "I have no doubt that, if, by way of experiment, the perineum was cut through in a healthy woman, no tendency to prolapsus would be thereby produced." I freely accept both experiment and proposition, but I cannot agree in the deductions based upon them. When the uterine ligaments are strong, the uterus does not readily leave its position. Sometimes traction steadily

¹ Transactions, vol. ii. p. 269.

exerted upon the cervix fails to draw down the body, but stretches the neck so that the uterus measures by the sound between six and seven inches. Klob¹ declares, that "relaxation of the uterine tissue is noticeable in the region of the external orifice, and consequently in what was previously the vaginal portion and lower segment of the cervix, which part often assumes a spongy softness. This relaxation must be attributed to the varicose condition of the bloodvessels, and absorption of the cervical tissue." This, and not hypertrophy, is probably the condition of this distended part. In many cases, before prolapse occurs, the uterus is affected by areolar hyperplasia, or the local atrophic state engendered by flexion, which last Dr. Hewitt regards as a frequent source of it, and when thus weakened it readily yields to traction. When the tractile force is checked by reposition of the uterus, the neck instantly contracts, and the length of the whole organ greatly diminishes.

May this fact not explain the experience of Huguier, who found only two cases of true prolapse in sixty reported cases, and of Routh, who in a large experience met with only three? It seems to me highly probable that these investigators, making their measurements while the uterus was prolapsed to the third degree, concluded that hypertrophic elongation of the supra-vaginal portion existed, when in reality this peculiarly elastic tissue, which was the consequence and not the cause of the descent, was the true pathological condition. Certainly some such explanation must account for the remarkable discrepancy which exists between the results of these two eminent gynecologists and the great majority, whose experience is opposed to theirs.

In these cases the force of traction appears to expend itself upon the most powerful uterine ligaments, those inserted at the axis of rotation, the cervico-corporal junction. They yield, and the cervix advances towards the vulva, but the uterus, supported though it is by factors of less power, resists steady traction, and remains in place. Legendre attached to the cervix uteri of a cadaver, a weight of fifteen kilogrammes, which was gradually increased to fifty during the period of an hour, then diminished to thirty, and kept up traction by that for two hours. At the commencement, the uterine canal measured by the sound five centimetres, and at its conclusion nine, the lengthening being chiefly in the cervix. In other experiments, a less weight kept in action for several days, caused complete prolapse with elongation of the cervix uteri.

Since the appearance of Huguier's essay upon supra- and infra-vaginal elongation of the cervix as conditions commonly mistaken for prolapsus, writers have commonly considered hypertrophic elongation of the cervix below the vaginal junction under this head. I shall not do so, because the propriety of such a course seems to me to be sustained neither by

¹ Op. cit., p. 88.

clinical observation nor pathological investigation, and because true cervical hypertrophy will be elsewhere treated of.

That there is a form of hypertrophic elongation of the cervix uteri, which occurs below the cervico-vaginal junction, and appears upon very superficial examination to resemble prolapsus, or even produces that condition by traction, I, of course, admit. But it appears to me erroneous to regard supra-vaginal elongation, which is marked by an attenuation of the tissues of the neck and "a spongy softness," according to Klob attributable to a "varicose condition of the bloodvessels and absorption of the cervical tissues," as true hypertrophy.

It is highly probable that this condition, the result of traction, may occur during pregnancy, and exist as a source of great annoyance after it. The following deductions by M. Gueniot¹ substantiate this view:—

"1. In certain women there exists during pregnancy, and occasionally at the time of parturition, a special affection of the neck of the womb, which generally passes unrecognized, and has not hitherto been the subject of any description.

"2. This affection may be designated under the name of *Œdematous Elongation with Prolapse of the Neck*, which indicates the principal constituent traits. Hyperæmia and turgescence of the organ, the arrangement of its cavity, which is transformed into a long and freely patent canal; the rapidity with which these symptoms may disappear, and the great facility with which they may be reproduced under certain circumstances, are all so many fundamental characters of the affection. Ulceration of the os tincæ, occlusion of the vagina, a thin and flaccid condition of the uterine walls, are also almost constant symptoms; as are also circumpelvic pains, a feeling of general debility, and variable disturbances in micturition.

"3. The causes of this change in the neck of the uterus are complex; they are derived from two sources: certain anatomical dispositions of the organ, and various circumstances exerting upon it a prolonged mechanical action.

"4. Although very rare, œdematous elongation with prolapse of the neck is, without doubt, a less exceptional affection than one would be inclined to imagine. Many observers have erroneously assimilated it to hypertrophic elongation, or to simple prolapsus, to which affections, in truth, it presents a great analogy, but from which it is essentially distinguished by proper and very important characters."

Course, Duration, and Termination.—Prolapsus uteri is unlimited in its duration, and, unless relieved by art, will continue indefinitely. It impairs the patient's comfort and capacity for exertion, but rarely has a fatal termination, unless by exciting peritoneal inflammation, or pelvic

¹ Archives Gén. de Méd., Juillet, 1872.

cellulitis, as I have seen it do in several cases. Even in the chronic form of the disease, death has in very rare cases occurred from urinæmia, the result of interference with the ureters. The trigone of the bladder becoming displaced to such an extent that the orifices of the ureters are pressed firmly against the symphysis pubis by the mass behind it, they become obstructed and distended, and in time hydronephrosis may result. Virchow¹ and Kiwisch² both announce this fact. An interesting instance of death thus produced may be found in the twelfth volume of the Transactions of the London Obstetrical Society, reported by Dr. Phillips. In a case of incarcerated uterus occurring in my own experience, and which will receive further mention elsewhere in this article, I was compelled to resort to a degree of force in returning the displaced organ, which at the time of application I regarded as attended by extreme danger. Had my efforts not succeeded, death would, I feel sure, have resulted; for the uterus and surrounding parts appeared to be about passing into a state of gangrene. This case before I saw it had resisted all the efforts which were applied by three competent physicians. After forcible replacement, the entire lining membrane of the vagina sloughed, and the patient narrowly escaped death from peritonitis, which was excited and ran a violent course. Forcible taxis was resorted to, with a conviction on the part of the attending physicians and myself, that the issue involved either restitution of the uterus or death.

Symptoms.—The symptoms of prolapsus are dependent upon two results growing out of the displacement: the mechanical interference of the womb with surrounding parts, and alteration induced in its circulation and tissue by reason of its abnormal position. The uterus may remain even in the third degree of descent without any marked symptoms, but generally congestion, areolar hyperplasia, and granular degeneration occur, which render it sensitive and intolerant of pressure or friction. At the same time, by dragging upon the bladder, rectum, and all the pelvic areolar tissue and fasciæ, and by protruding between the labia, it produces discomfort and often impedes locomotion to a great extent. The most prominent of the symptoms thus created are the following:—

- Sensation of dragging and weight in the pelvis;
- Rectal and vesical irritation;
- Pain in back and loins;
- Great fatigue from walking;
- Inability to lift weights;
- Leucorrhœa and other signs of congestion.

It is a very singular and striking fact, that in prolapsus, even of the third degree, there is very commonly no menstrual disorder, and equally remarkable, that sterility does not ordinarily exist. These immunities

¹ Trans. Obstet. Soc. of Berlin, 1847.

² Clinical Lectures.

are probably dependent upon the facts that the uterine catarrh which usually exists is rather the result of a passive congestion of the endometrium than of true inflammation, and that the axis of the organ, although altered in direction, is not bent upon itself so that an obstruction in it is created.

Physical Signs.—All the symptoms detailed will only excite suspicion and prompt an examination which will fully elucidate the case. Should the affection exist only in the first degree, the finger passed up the vagina will meet with the os low down in the pelvis and pressing upon its floor. As it is slid upward in front of the cervix and along the base of the bladder, the resisting anterior wall of the uterus will be clearly distinguished, and it may be found that anteversion or anteflexion exists, complicating prolapsus.

If the second degree have been reached, the os will be found at the ostium vaginae, prevented from escaping only by the resistance of the sphincteric muscles, and the body, instead of lying forwards, will be to some extent retroverted. To determine the degree of prolapsus, more especially in this stage, the patient should be examined standing.

Sight and touch will combine in making a diagnosis in the third degree of prolapse rapid and easy, but even here I have known very grievous mistakes committed. The apparent ease of the diagnosis sometimes causes error by inducing neglect of that caution and watchfulness which, even in the simplest cases of disease, constitute the only safeguard of the physician.

One very curious phenomenon which in the physical investigation of these cases must have struck every practitioner is this: the uterus being procident and a sound introduced, it passes up for the distance of five or six inches. The organ now being replaced, and again examined by the sound, it is found to measure only three or four, and this experiment may be repeated any number of times with the same result. The explanation of this fact is given in connection with the subject of pathology.

Differentiation.—In any of its varieties prolapsus uteri may be confounded with fibrous polypus, inversion of the uterus, and hypertrophic elongation of the neck, from all of which, however, it is readily distinguished if the practitioner be awake to the possibility of error. From the first it is known by the presence of the os and cervix, and the general shape of the mass. From the second, by the presence of the os and cervix, and absence of the signs of inversion. The third will readily be recognized by the great length of the cervix, the impossibility of replacing the supposed prolapsed organ, and the great depth of the uterus discovered by the uterine probe, after it has been restored to the pelvis.

Prognosis.—In most cases a great deal of relief can be effected by medical and minor surgical means. In a few in which the displacement is secondary to the existence of a large abdominal or perhaps uterine tumor,

nothing can be done either for relief or cure. In many in which descent of the uterus is secondary, due to traction upon it by the prolapsed vagina, bladder, and rectum, cure can be effected, even where the third degree has been reached, by surgical procedures appropriate to the cure of the primary displacements which produce traction upon the uterus.

In cases existing only in the first and even the second degree cure may, in favorable cases, be accomplished by mere removal of the causes which are gradually depressing the uterus.

Complications.—Prolapsus of the uterus in its first and second degrees, and still more frequently in its third, produces the following complications:—

- Congestion of the uterus and its appendages ;
- Endometritis and Fallopian salpingitis ;
- Hyperplasia of uterus ;
- Hypertrophic elongation of the cervix ;
- Cystocele ;
- Rectocele.

As soon as the uterus descends into complete prolapse, and to a less extent when it has reached only the first and second degrees, its tissue becomes congested, and appears swollen, œdematous, soft, and relaxed. In time this passive hyperæmia induces hyperplasia, which especially affects the connective tissue. As a consequence the uterus is enlarged, and increased in weight and capacity. Not only do congestion and hyperplasia affect the parenchyma of the uterus ; the mucous membrane and submucous tissue are likewise disordered, and endometritis is an almost invariable consequence of prolapse. It has been already stated that peculiar changes occur in the cervix. This part becomes particularly soft and relaxed ; its vessels become varicose, and the muscular tissue is often absorbed in great degree.

In consequence of these secondary morbid states we generally have as concomitant symptoms, leucorrhœa, dilatation and eversion of the cervix, disorders of the bladder and rectum, and sometimes cystitis. Eversion of the cervix is too important a feature of the condition to be passed by without special mention. As the uterus descends it inverts the vagina. This, by its cervical attachment, which now becomes depressed to a point far below its upper portion, makes constant traction upon the os externum ; the principle being the same as that by which the colpeurynter is made to dilate this part for the establishing or expediting the first stage of labor. As this action is prolonged and increased by further descent of the uterus and inversion of the vagina, the cervical canal is rolled out, so as to become completely everted, and the os internum becomes literally the external and only os uteri, the real os externum having disappeared by expansion.

Dislocation of the bladder is accomplished by uterine descent to such an extent that if a catheter be introduced it will pass downwards and

backwards. This complication is important, for not only do traction and dislocation tend to the production of cystitis; it is further induced by reflex irritation and by decomposition of urine occurring from retention, after urination, in the pocket formed by the inverted wall of the bladder. By a similar process prolapse of the anterior wall of the rectum occurs, and results in fecal impaction at this point.

Sudden or Acute Prolapsus may come on from any great effort, a fall, or violent contraction of the abdominal muscles, acting upon a uterus which is enlarged by hyperplasia, subinvolution, pregnancy, or tumors. It may even occur to a uterus normal in size and consistency. In an instant the patient feels that something has given way within her, becomes prostrate and much alarmed, and suffers pain of an expulsive character, as if desirous of forcing something from the pelvis. I have twice seen it occur within a fortnight after delivery from sudden and violent muscular effort: and once in a nulliparous girl of nineteen years, in consequence of a violent muscular effort made to lift a heavy weight, the cervix was driven out of the vulva, the body being arrested by the sphincter vaginae and perineal septum. The last patient I saw a year after the accident. She had suffered intensely from the displacement, but from false modesty had never told of it. I discovered distinct traces of the hymen, which I had every reason, both physical and moral, to believe had not been ruptured by sexual congress.

In such a case as this it appears to me highly probable that the utero-sacral ligaments are ruptured. This supposition, the difficulty of proving which by necropsy is apparent, may have attracted attention, but the only allusion to it which I have met with is the following from Courty, who, in speaking of the utero-sacral ligaments, says, "if they are stretched or broken, the entire organ falls."

In acute prolapsus, should reduction not be effected at once, violent pain will be felt over the sacrum and groins, and the degree of traction exerted upon the pelvic peritoneum may result in dangerous inflammation.

Treatment.—The first indication as to treatment is to return the displaced organ to its normal position; the second, to keep it there.

Methods of Replacing the Uterus.—In general no difficulty will attend the performance of the first indication, but in some cases careful and intelligent taxis will be necessary. The best method for applying this is the following: the patient, after thorough evacuation of the bladder and rectum, if this be possible, should be placed in the genu-pectoral position, in order to cause gravitation of the pelvic and abdominal viscera towards the diaphragm. She should not kneel upon a soft or yielding bed, into which the knees would sink, but upon the floor or a table, for the object of the posture is to elevate the buttocks and depress the thorax as much as possible. Ten or fifteen minutes should then be allowed to elapse before any efforts are made at reduction. In this time the intense congestion which

exists in the pelvic viscera will greatly diminish. The operator then taking the cervix into the grasp of his index, middle, and ring fingers, pushes the uterus firmly and forcibly upwards in coincidence with the axis of the inferior strait. While the right hand is thus employed, the left rests upon the back of the patient and steadies her body. No sudden or violent force is exerted, but by steady pressure, kept up, if necessary, for fifteen, twenty, or thirty minutes, the uterus is restored to its place.

Few cases will resist this kind of effort at reduction, although some may do so. For example, I have already referred to a case in which an incarcerated uterus, which appeared upon the point of becoming gangrenous, could not be reduced by the method described, and in which, as no time was to be lost, I produced complete anæsthesia, and then, taking the organ firmly in the extremities of the thumb and three fingers, I carried it by main force into position.

Methods of Sustaining the Uterus.—Before pursuing any special course of treatment for this end, the practitioner should endeavor to discover the cause of the descent. If it be due to increase in the weight of the uterus, or to pressure exerted upon it from above, it is evident that the indication will be very different from what it would be if the cause were traction by a prolapsed vagina. Unfortunately, however, after the disease has existed for some time, it is often impossible to fix definitely upon the cause; for even if it were originally increase of uterine weight, the lengthy inversion of the vagina, and stretching of the uterine ligaments involved in its descent, will have destroyed all power in these parts.

As far as possible, however, the original cause should be ascertained, and if it be properly sought for it will, in a number of cases, be discovered. For example, suppose that there be no excessive enlargement or prolapse of the vagina, no evidence of excessive downward pressure, and yet the uterus lies upon the pelvic floor. Strength should be given to its normal supports.

Suppose, on the other hand, that the vagina be found to be in its normal state, and the prolapsed uterus to be very heavy, weighing, perhaps, three times what it should. This increase of weight should receive especial attention.

If, again, the insignificant, atrophied uterus of an old woman of seventy be prolapsed into a large, flabby, non-contractile vagina, traction by this vagina may safely be accredited with the uterine displacement.

Lastly, if the common coincidence of rupture of the perineum, with subinvolution, and prolapse of the vagina and uterus be encountered, it may be assumed that increase of uterine weight, loss of support, and traction, have all combined to bring about the issue.

It should be the care of the physician to keep every one of the indications suggested by these factors in mind; and in every case attend first to

that which concerns the primary and most important ; afterwards, to those which are secondary and created by the displacement itself.

A very important question offers itself for consideration here : Is it possible to give relief in an aggravated case of prolapse in the third degree without resort to operative procedure? The position has of late been taken by high authority that surgery must always be invoked as our final resort in such cases, and that less radical treatment should be looked upon as palliative and in great degree preparatory. This I regard as a doctrine calculated to do great harm, and one which entirely misrepresents the true requirements of the subject. I should state the matter thus : In a very large majority of cases of prolapse of the uterus, whether in the first, the second, or the third degree, relief may be obtained without resort to operation ; in a certain number of cases where traction by the prolapsed vagina, rectum, or bladder is the cause of the uterine displacement, it should be our chief resource. Now it may be said in reply to this that even if such traction was not a primary factor in the displacement, it is always a secondary one, and, like a great many theoretical observations, this will carry weight. But it is not really a valid argument at the bedside for him who studies these cases from a scientific standpoint, however powerful it may be in the mind of the empirical gynecologist. If the perineum have lost all power, and a loose, flabby condition exist in the vagina from subinvolution or hyperplasia the consequence of prolonged congestion, and the resulting vaginal, vesical, and rectal prolapse has dragged the uterus down, operation merely fulfils the important indication of removing the cause of the trouble, and logically presents itself as an important resource. If, on the other hand, a heavy uterus presses down of its own weight, or a normal one is forced down by pressure from above, closing the perineum, or contracting the vagina by colporrhaphy, is illogical, unnecessary, and empirical. I would conclude this part of the subject by repeating, that operative procedure for uterine prolapse should be only exceptionally resorted to, and then to fulfil an indication, not to comply with a dogmatic rule.

I have at this moment under observation a number of cases in which entire relief to complete prolapse has been afforded by means which will soon be mentioned here. So complete is this that the patients thus relieved would not listen to the proposal of operation. It is true, that complete cure has not been effected, but complete relief has. If the operative procedures for such cases were simple, entirely free from danger, and certain as to result, a universal resort to them would be indicated ; but they are not so. I would not willingly appear to oppose operation in these cases, for I favor it and constantly practise it. I merely urge the application to them of the ordinary rules which govern the scientific surgeon elsewhere.

I will now consider in order the methods most appropriate for resisting each of the pathological conditions which result in uterine prolapse.

The means adapted to prevention of pressure from above are—

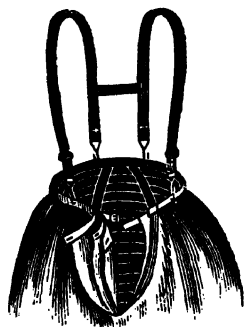
Removing weight of clothing by use of skirt-supporters ;

Removing weight of intestines by prohibition of tight clothing, use of an abdominal supporter, and avoidance of injurious muscular efforts ;

Preventing accumulation of urine and feces.

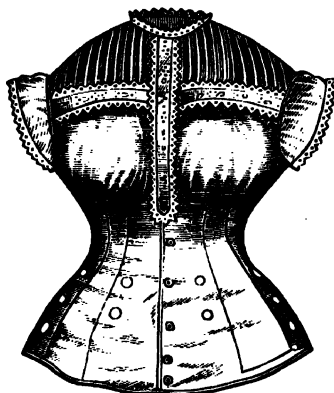
The skirt-supporter is merely a pair of suspenders that may be contrived by any woman of ordinary ingenuity, and which enables the patient to carry the whole weight of the under-garments upon the shoulders. A representation of a very good one will be found in Fig. 141. Or the skirts may be affixed to a waist, which replaces the corset, by buttons, as shown in Fig. 142.

FIG. 141.



Skirt-supporter.

FIG. 142.



Waist with buttons for support of skirts.

There are many varieties of the abdominal supporter, some of which, unfortunately, are so constructed as to do absolute harm. Should compression be exerted by them upon the abdomen above the navel, it will tend to increase pressure upon the uterus, or at least to annul all the benefit of that exerted below this point. The principle upon which these supporters should act is this—they should do just what the patient's hands do when she places them above the pubes, and lifts the abdominal viscera. Some of them are composed simply of bands of thick cloth, others are pads or disks of horn or metal, with encircling bands like those of the hernial truss. The physician may choose intelligently, if he only bears in mind what it is that he desires to accomplish by them.

During the continuance of treatment the patient should be limited as to exercise and confined to bed during menstrual epochs, when the uterus is known to be heavier than at other times. Should the accident have immediately followed parturition, she should be kept in the recumbent posture to favor the accomplishment of involution.

Means adapted to diminution of uterine weight are—

Removing polypi, tumors, etc., by operation ;

Removing uterine inflammation, hypertrophy, and congestion, by appropriate treatment ;

Amputation of the neck of the womb ;

Repairing laceration of the neck.

Sometimes, by applying appropriate treatment to an enlarged cervix, the uterus is in time so much lightened by cure of attendant hyperæmia that relief is effected, but in other cases the hyperæmia is so persistent and rebellious that these means fail, and resort must be had to more powerful ones. A lacerated cervix will often prove a focus of irritation, and thus a cause of uterine congestion and hyperplasia, which may result in descent of the uterus. Under these circumstances closure of the laceration will often effect a complete cure, and it should without delay be performed.

In some cases, even when parturition has never occurred, hypertrophy of the cervix occurs and proves a cause of prolapsus. For this, resort has been had to amputation of the neck. M. Huguier, of Paris, was, in 1848, the first to perform this operation for prolapsus, though it has long been resorted to for cancer. Since that time it has been performed by many others, after methods which will be described in a chapter devoted to the operation. It must not be supposed that the mere removal of superabundant tissue is relied upon for the diminution of uterine weight. It is rather the derivative and alterative influences set up by amputation of which the surgeon endeavors to avail himself.

Means for strengthening or supplementing uterine supports:—

The recumbent posture ;

Local astringents and tonics ;

General tonics ;

Exercising the retentive powers of the abdomen ;

Pessaries.

The recumbent posture, persistently persevered in, accomplishes a great deal of good in cases of prolapsus in the first, and sometimes even in the second degree. The buttocks being elevated, the uterus retreats from the pelvis, and its supports are left entirely at rest. Opportunity is thus afforded the weakened tissues to contract, to gain tone and strength, and in time to resume their functions. The results of posture may be materially increased by simultaneous employment of the following agents.

Astringents and Tonics.—By these means the pelvic tissues may be made to sustain the uterus for a time, and thus by keeping it out of danger of congestion from interference with circulation, opportunity is given for removal of engorgement or slight hypertrophy.

The astringents most commonly employed are tannin, alum, persulphate

of iron, and the bark of the white oak. They may be injected into the vagina in solution or infusion, by means of the ordinary syringe. A very excellent astringent under these circumstances is the infusion of the sumach berry, which grows commonly by our roadsides throughout the country.

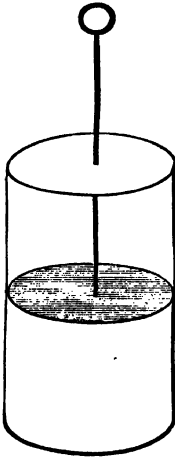
Tonics may be locally applied by the use of cold hip-baths, douches, sea-baths, and by copious vaginal injections of cold water, salt and water, or sea-water.

General tonics, mineral and vegetable, should be employed. Among these, ergot, strychnia, and iron may be specially mentioned. Sea-bathing is peculiarly beneficial for this purpose, for it not only acts locally, but improves the tone of the whole system. In speaking generally of the influences which sustain the uterus, the peculiar retentive power of the abdomen has been mentioned very fully. Habits of life, with reference to exercise, dress, etc., exert a marked influence over this power. The woman who rarely exercises so as to call for full expansion of the lungs, gradually diminishes her breathing power, and in the end suffers from atony of the thoracic muscles. This renders diaphragmatic action feeble; the alternate rise and fall of the abdominal viscera is lessened; they settle down upon the pelvic viscera; and the abdominal muscles lose their power and activity. This result is produced not only by a life of inactivity, which enfeebles the muscles which accomplish thoracic and abdominal respiration by want of use, and thus indirectly lessens diaphragmatic action; any influence which directly interferes with the piston-like action of the diaphragm, or indirectly enfeebles by prolonged pressure the thoracic and abdominal muscles, tends to overcome this important function of the abdomen in supporting and keeping the uterus in good circulatory condition. Should any one doubt this, let him examine with Sims's speculum several tightly-laced women, who, since childhood, have done all that art could do to annihilate this sustaining power of the abdomen; and then the same number of women undeformed by the pernicious habit. Let him even examine the same woman with and then without corsets, and he cannot fail to recognize the slight uterine movement in the one case, and the active, vigorous rise and fall in the other. The influence of constriction at the waist will be readily appreciated by reference to Figs. 143 and 144.

As the retentive power of the abdomen is destroyed by pernicious habits, it may with perseverance and judicious efforts be restored, and the importance of striving to accomplish its restoration in all cases of uterine displacement cannot be too strongly insisted on. This should be done first by freeing the trunk from all constriction and weight; second, by causing free action of the diaphragm by general exercises which cause this muscle to work vigorously; and, third, by the practice of special exercises adapted

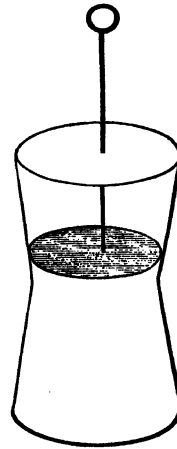
to development of the thoracic and abdominal muscles. As excellent general exercises may be instanced, rowing in a light boat or upon a rowing machine,¹ practising the "lift cure," the use of Goodyear's "parlor gymnasium," or calisthenics. Walking and riding, either in a vehicle

FIG. 143.



The action of the diaphragm, the parts in normal condition.

FIG. 144.



The action of the diaphragm, the parts deformed by tight and heavy clothing.

or on horseback, are excellent in their results upon the general health, but they fail utterly in fulfilling the special indication required. They improve nutrition and strengthen the muscles of the lower extremities, but not those of the upper portion of the trunk. Their substitution therefore for those just mentioned is an error. They may add to the general good accomplished, but do not develop either the lost function or the muscles which should perform it.

There are also particular exercises adapted to the especial development of the abdominal muscles, at the same time that they excite an exaggerated action on the part of the diaphragm, and tend by that and by gravitation to raise the pelvic viscera. For a full exposition of this subject I would refer the reader to a work by Dr. George H. Taylor.² His directions for the special fulfilment of this indication I give in his own words. "The patient lies back downward on a horizontal couch, with the hands strongly clasped over the head and pressing on its crown; the feet drawn up so that the heels are in close contact with the trunk, the soles of the feet resting on the couch, the knees and thighs being strongly flexed. By a moderate effort the patient raises the hips as high

¹ Implements for these exercises are on sale in all our large cities.

² *Dis. of Women*, Maclean, N. Y., 1871.

as she can, or till the thighs and trunk form a straight line, the shoulders and the feet only resting on the couch; in this position the trunk must for a few moments be sustained. The hips and trunk are now allowed slowly to fall back to the commencing position on the couch. This action may be repeated a dozen or more times, a few moments of rest intervening."

Another exercise is this: "The invalid lies on a horizontal couch with face downward, the elbows resting firmly on the couch, the arms perpendicular and supporting the upper portion of the trunk, the ankles strongly flexed, the toes, like the elbows, resting firmly on the couch. By a strong effort all the muscles of the anterior portion, that is, the under side of the body, are caused to contract, the knees are straightened, the hips and whole body raised from the couch, and made to form a horizontal line, touching the couch at no point but the elbows and toes."

Still another is the following: "Two stools or chairs are placed so far asunder that the patient, in lying face downward across them, will be supported by the chest resting upon one and the legs upon the other. While thus lying the abdomen is unsupported and consequently gravitates towards the ground, causing retraction of the generative intestine. In this position, the patient must endeavor to maintain her body in a straight line, in opposition to the force of gravity acting on its central portion."

Pessaries.—The plan of supporting the prolapsed uterus, vagina, bladder, and rectum by mechanical contrivances which supplement the enfeebled natural supports constitutes a method of great value, and one which should never be cast aside. In a great many cases, objections, or advanced age on the part of the patient, want of skill on that of the physician, and the uncertainty as to result which attaches to all surgical procedures for the cure of prolapse, render a resort to a method which relieves very greatly, during even a long lifetime, one which is dictated by prudence and good sense. To support four organs, the vagina, uterus, bladder, and rectum, which are, and have been for a long time, prolapsed, by an artificial mechanical means, frequently taxes the skill of the ablest gynecologist, and sometimes utterly defeats his best attempts. Let the general practitioner bear this undeniable fact in mind, and not become discouraged by difficulties, nor disheartened by repeated fruitless efforts. Let such a one who reads this believe too the assertion which I here make, that I advise no instrument merely because it has been generally accepted, and that I limit myself to the mention of those only which I daily employ in practice with good results.

In employing pessaries for all the varieties of prolapsus of the pelvic organs, the desideratum is an instrument which will not distend the vagina, at the same time that it will support the uterus. Such instruments as sustain the vagina without distending it, and thus allow it to regain something of its former tone and elasticity, are those which should

be, as far as possible, selected. The great functions which, in the majority of cases, are required of a pessary in prolapsus are these : first, to supplement the action of the utero-sacral ligaments, the chief factors in sustaining the uterus ; second, to keep the vagina, bladder, and rectum in place, so as to prevent them from perpetuating the uterine displacement by traction.

I have already said, that he who treats this condition, in any of its varieties, by replacement and support by a pessary, must frequently meet with insuccess. Is it not illogical to suppose that by any mechanical contrivance, heavy, congested, and prolapsed organs, often four in number, very generally three, can be, without preparation or the use of allied means, kept at once in normal position? Yet such a result is often anticipated. Before resorting to a pessary at all, it is a good plan to keep the patient in the recumbent posture for a few days, or, if possible, a week, with the foot of the bedstead elevated twelve inches, for the purpose of allowing congestion to pass off. During this time mild cathartics should be given to further this end by removal of fecal matter and stimulation of hepatic circulation, and the vagina should be systematically and copiously irrigated with astringent fluids to harden its tissues in preparation for a pessary, to effect support of the uterus, bladder, and rectum by a re-establishment of its sustaining power, and to cause contraction in its distended superficial bloodvessels. This time is not wasted, for the case is sure to be a lengthy one, and at the end of it, the patient is much better able to begin treatment of a mechanical kind without meeting with mishaps, which, in the commencement, dishearten and discourage her. Nowhere is the statement more true than here, that a good beginning advances us half way to success.

The patient having risen, all of these means, except recumbency, should be continued throughout treatment, and others which are adjuvants to the pessary should be adopted, as, for example, removal of weight of clothing ; avoidance of deleterious muscular efforts, long standing, and constrained postures ; diminution of weight of uterus ; development of retentive power of the abdomen ; and others which have been already enumerated. Having attended to all these points, the pessary presents itself as a valuable resource by which to complete and effect restoration of the parts : without attention to them it is, as a rule, too feeble to accomplish, unaided, the desired result.

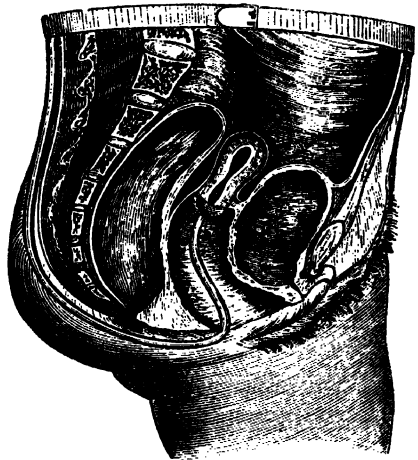
Let us suppose that we are dealing with a case of prolapse in the first or second degree, what pessary should we choose? This will depend upon the amount of weight to be sustained. If this be great, subinvolution of the uterus existing, and depressing the organ, very possibly no internal pessary will succeed ; if it be moderate, almost any one of this list will do so—Meigs's elastic ring, Hodge's, Smith's, Hewitt's, or Thomas's pessaries, all of which are shown by diagrams in connection with retroversion.

None should be used which distends the vagina, and that employed should be worn without any sense of discomfort; should be kept clean by irrigation with astringent fluid every night, or night and morning; and should be examined, at intervals, by the physician, to make sure that it is not injuring the tissues.

If the great weight of the uterus render these pessaries, which pass entirely into the vagina, ineffectual, or should the case be one of prolapse in the third degree, others, which are in part external and in part internal, should be employed. I very rarely attempt to sustain a completely prolapsed uterus by an internal pessary, because I usually despair of success, and because I have known such evil consequences result from them in such cases, that I am unwilling to let the patient pass out of my sight with one in place. It is safer, more effectual, and more comfortable for both physician and patient that she should wear an instrument which she can remove at will, allow the parts to rest during the hours of recumbency, and replace upon rising.

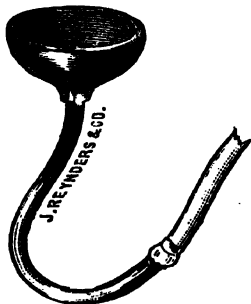
There are three methods by which such support may be furnished, by a stem curling over the perineum, by one passing out of the vagina over the symphysis pubis, and by one ending at the middle of the vulvar opening, and resting upon a bandage passing beneath it. Of these plans, the best is the first, and the next, in merit, the second. The third is objectionable on account of the want of some point of support against which to fix the distal extremity of the stem, and to prevent motion in it.

FIG. 145.



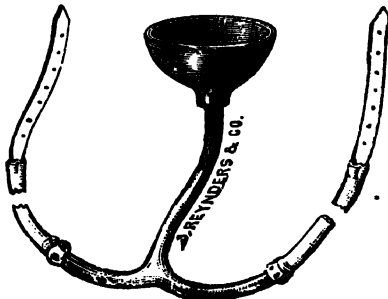
Cutter's prolapsus pessary in position.

FIG. 146.



Cutter's prolapsus pessary.

FIG. 147.



Thomas's modification.

No pessary with which I am acquainted, so universally answers the indications of supplementing the action of the utero-sacral ligaments and sustaining the prolapsed vagina, rectum, and bladder as Cutter's admirable pessary, shown in Figs. 145 and 146. The cup at its upper extremity receives the cervix uteri, and the simplicity of the instrument enables the patient to remove and replace it with perfect facility. This should be done in the recumbent posture upon retiring at night and rising in the morning.

Means for preventing traction by the vagina :—

Perineal support ;

Perineorrhaphy ;

Colporrhaphy. ...

Perineal Support.—I have already pointed out the important function of the perineal body in closing the mouth of the vagina and offering a buttress for the support of its walls. When rupture of the perineum occurs, its sphincteric powers are destroyed, and the result is sagging of one or both columns of the vagina and coincident descent of the uterus. By firm pressure at the weak spot, by means of a pad or cushion filled with hair, cotton, or air, and combined with an abdominal supporter, to which it may be attached, partial relief is sometimes obtained.

Perineorrhaphy.—Much more complete and permanent support may be given to the vagina, and prolapse of its walls be much more certainly obviated, by restoration of the perineal body by the operation of perineorrhaphy. If the uterus be not very heavy, this operation often proves a very excellent means of relief, for it removes the tractile power, which pulls down this organ, and thus the cause of the accident is taken away. But this operation, although efficient in these cases, is not likely to prove so where so heavy a weight, as a much enlarged uterus, requires support.

It must not be supposed that, in cases of prolapsed vagina, perineorrhaphy is limited to instances in which the perineal body is ruptured. It is equally applicable to those in which it has lost its power from any of those influences which are mentioned in the chapter upon the perineum ; such as subinvolution, etc. etc.

In all cases, to be effectual, perineorrhaphy must restore the lost organ, the perineal body, and not simply shut the evil from sight by drawing before it a thin and useless curtain, which extends from the fourchette to the anus.

Should this operation not be sufficient to remove traction, colpo-perineorrhaphy, or anterior or posterior colporrhaphy, or a combination of these may be practised.

For these procedures the reader is referred to chapters which have gone before.

By these means traction is taken away from the uterus, and if this was

the cause of its prolapse relief will probably follow, but it is never safe to promise a good and permanent result from any of the operations of colporrhaphy. If in a case of laceration of the cervix, relaxation of the vagina, and complete distention or rupture of the perineum, the patient is willing to submit to three operations—operation upon the cervix, colporrhaphy upon anterior wall, and closure of the perineum—cure will often be complete and permanent. This is a trying ordeal, both mentally and physically; nevertheless, most women affected by prolapsus in the third degree would unhesitatingly accept one of even greater severity with the prospect of cure.

Besides the operations here mentioned as practised upon the vaginal walls, Episiorrhaphy, which has been already described, has at various times been resorted to as a curative or palliative process for the affection of which we are treating. This, too, has been variously combined and modified, as, for example, under the names of Inferior Elytrorrhaphy, Elytro-episiorrhaphy, Episio-perineorrhaphy, etc. For fear of confusing the subject by the introduction of details which, although highly interesting, are of no great practical value, I shall not describe these modified procedures, but pass them by with this mention.

Not only have efforts of this kind been made for narrowing the vagina and creating an artificial cicatricial anterior or posterior column for the support of the uterus; the actual cautery, mineral acids, escharotics, ulceration created by galvanic pessaries, and sloughing produced by pressure by forceps, have all been tried for the accomplishment of the much-desired end. I shall not go into the detail of describing these procedures, but refer the reader, who desires further information upon them, to Scanzoni's work upon the Diseases of Females. All these methods have the disadvantages of proving excessively painful, after anæsthetic influence has passed off, and of being more unmanageable and less certain in their results than those here described.

CHAPTER XXVII.

ANTERIOR DISPLACEMENTS OF THE UTERUS.

Anteversion.

Definition and Frequency.—This disorder of position consists in an anterior inclination of the uterus, so that the fundus approximates the symphysis pubis and the cervix retreats into the hollow of the sacrum. Although not so frequent as its kindred condition, ante flexion, it is by no means of rare occurrence. At times it presents itself as an annoying

complication of areolar hyperplasia or fibroid growths, while at others it is produced without any alteration existing in the uterine parenchyma.

Dr. Churchill¹ opens his chapter upon this subject with these words: "It may be thought somewhat out of place to treat of some of these displacements here, as they are so intimately connected with pregnancy and parturition; but as they do occur independently, it appears to me preferable to travel so far out of the way in order to complete the subject, rather than give a partial view, or omit it altogether." My own experience leads me to an entirely different conclusion from that here recorded by the eminent Irish obstetrician. I meet with versions very commonly in the non-puerperal state, although it must at the same time be admitted that anterior displacements generally assume the character of flexions. To give some idea of the relative frequency of the various anterior and posterior displacements, I present the following tables. The first table is one constructed from a valuable statistical report by Dr. Meadows:—

Number of cases of displacement examined	.	.	.	.	.	84
“ “ posterior displacement	52	{	Retroflexion	.	.	34
			Retroversion	.	.	18
“ “ anterior displacement	32	{	Anteflexion	.	.	20
			Anteversion	.	.	12

It is impossible to reconcile the discrepancy of the results obtained by statistical evidence accumulated by different observers. Thus, for example, out of 339 cases of displacement recorded by M. Nonat,² the following were the number of anterior and posterior inclinations:—

Anteversion	.	.	.	.	.	.	135
Anteflexion	.	.	.	.	.	.	33
Retroversion	.	.	.	.	.	.	67
Retroflexion	.	.	.	.	.	.	14

"Anteversion," says Klob,³ "in general is a rare form of displacement, and occurs much less frequently than retroversion."

Emmet, out of 555 cases of version, found 236 to be anteversion and 295 retroversion.

Subjects of this character belong to that class upon which reasoning and theorizing accomplish no good, but rather the contrary. The only way in which they can be settled is by carefully collected statistics, and one would suppose that this method would be conclusive. Yet we see in the present case how far this is from being the fact. Dr. Meadows's most frequent displacement is M. Nonat's and Scanzoni's least frequent! Nothing but discrepancy and doubt result from the comparison of the figures of these three conscientious observers. "There is nothing," said

¹ Diseases of Women, Am. ed.

² Mal. de l'Utérus, p. 416.

³ Klob, Patholog. Anat., p. 68.

Sydney Smith, "so unreliable as figures, except facts." After such a comparison of statistical evidence one feels inclined to agree with him.

The normal position of the uterus is one of slight anteversion, the axis of the body corresponding with that of the superior strait, which is a line running from the umbilicus, or a little above it, to the coccyx.

The degree of this forward inclination may be so increased by slight causes as to constitute a morbid state. As to the line which separates what is normal from what is abnormal, it is impossible to lay down any exact rule; experience must be our guide. In general terms we may say, that when the long axis of the uterus is found lying across the pelvis, the fundus near the symphysis pubis, and the neck in the hollow of the sacrum, anteversion exists.

Predisposing Causes.—The predisposing causes of this affection are parturition, enfeebled muscular condition, habits of indolence and inactivity, and loss of tone in the abdominal walls.

The exciting causes may thus be presented.

Influences increasing the weight of the uterus.

- Congestion;
- Hypertrophy or hyperplasia;
- Subinvolution;
- Fibroids;
- Pregnancy;
- Laceration of the cervix.

Influences forcing the fundus directly forwards.

- Violent efforts;
- Abdominal effusions;
- Abdominal tumors;
- Tight clothing.

Influences enfeebling uterine supports.

- Ruptured perineum;
- Relaxation of ligaments;
- Destruction of the retentive power of the abdomen. Cystocele.

Influences dragging the fundus directly forwards.

- False membranes;
- Prolapsus vaginæ;
- Cystocele;
- Shortness of the round ligament; (?)
- Anteflexion.

A large number of cases will be found due to areolar hyperplasia, a number by no means inconsiderable to fibrous tumors, some of the most irremediable cases to false membranes, many to cystocele which takes away support at the same time that it produces traction, while a few will exist without other apparent cause than direct pressure from some power

which forces down the abdominal viscera upon the fundus. The last cause is much aided by laxity of the abdominal walls, which robs the viscera of support.

One fruitful source of the condition is unquestionably the gradual destruction of the retentive power of the abdomen by habits which engender atony of the thoracic and abdominal respiratory muscles and enfeeblement of the action of the diaphragm.

Symptoms.—In a certain number of cases anteversion will be found to exist without creating any disturbance either constitutional or local. This, however, is a rare exception to a general rule. By pressure of the os against the posterior vaginal wall, anteversion commonly induces dysmenorrhœa and sterility, and by pressure of the fundus against the bladder, and the cervix against the rectum, these viscera are irritated and interfered with in their functions. The bladder more especially suffers, sometimes a state bordering upon cystitis being engendered. Pressure upon the rectum more rarely produces tenesmus and a painful, irritable state.

In exceptional cases it is surprising to see to how great an extent locomotion is affected by this condition. My experience furnishes me with four cases in which patients were for long periods confined to bed or the lounge on this account. In one of these the patient had not left the house for four years; in another she had scarcely assumed the upright posture for eight months; the third was the counterpart of the second; while in the fourth the patient for twelve years had never walked over a quarter of a mile without serious inconvenience. In each of these cases positive proof was afforded me of the agency of anteversion in producing the disability which existed, by its removal when the uterus was properly sustained by an anteversion pessary, and by relapse at once recurring when without her knowledge she was left without it. Not one of these women was suffering from that hysterical condition which so often misleads the physician as to the results of remedies.

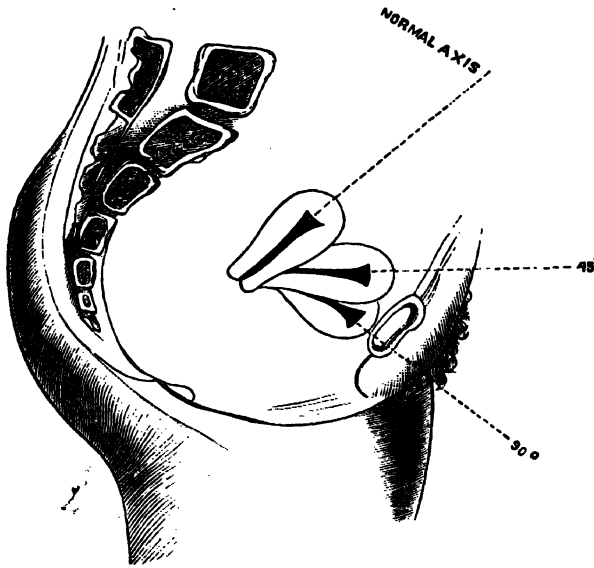
Course, Duration, and Termination.—Even if the exciting cause of the condition be removed, it will usually continue, for the broad and utero-vesical ligaments have by long distention become stretched and enfeebled, while there has been simultaneous contraction in the utero-sacral ligaments from long disuse. The first fail to aid the fallen organ; the last help to keep it out of position by lifting the cervix up against the rectum. Sometimes cure is affected by pregnancy, the displacement disappearing as involution is accomplished. Usually, however, unless the exciting cause of the condition be removed, and the organ be kept in proper position for a year or more, the displacement will continue unabated.

Varieties.—Anteversion may be complete or partial. While there are three degrees of retroversion and of prolapse, there are but two of this displacement, for the axis of the uterine body is naturally inclined so much

forwards as to prevent us from including slight increase of inclination under the head of disease.

Fig. 148 will show the varieties referred to; an inclination of 45° representing the first degree, or partial anteversion, and that of 90° the second degree, or complete anteversion.

FIG. 148.



The degrees of anteversion.

Diagnosis.—When in a case of this displacement vaginal touch is practised, the patient lying on the back, the index finger passed into the fornix vaginae discovers that the cervix is absent. A rapid investigation will prove that it is not to be found in the pubic or lateral regions of the pelvis, and deep exploration with two fingers will discover it high up in the hollow of the sacrum. The finger being then passed towards the pubes will come in contact with a hard ridge, which will run towards the symphysis. Conjoined manipulation will prove this to be the body of the uterus, and complete the diagnosis. Should further evidence be required, the uterine probe, very much curved, may be passed into the cavity, though this is rarely necessary and always difficult.

Differentiation.—Capuron tells us that Levret mistook the first case he saw for stone in the bladder, operated for this, and sacrificed the life of the patient. In spite of such a grave mistake at the hands of so great an authority, it may be stated that there is no diseased condition with which this should be confounded. The disease inducing the displacement may not be recognized, or some serious error may be made as to its nature,

but that does not concern the present subject. The recognition of the mere fact of the anteversion is never difficult, if proper diagnostic means are brought to its elucidation.

Prognosis.—The prognosis as to any serious injury which will arise from the displacement is decidedly good, although there are many inconveniences and discomforts connected with it, such, for example, as vesical and rectal irritation, neuralgia in consequence of compression of the nerves, and difficulty in locomotion; none of these, however, go on to a dangerous degree of development. If the condition be not treated by mechanical means, it will prove entirely incurable; but by these the prospect of great improvement and even of complete cure is very good. Important and early evidences of improvement resulting from mechanical treatment are frequently obtained in disappearance of dysmenorrhœa and sterility. It is often difficult to remove the exciting cause of anteversion, and even should this be accomplished, the uterus is so prone to retain the abnormal position in which it has long been kept, that great difficulty attends its retention in normal position. One of the reasons for this is the fact, already stated, that the uterine ligaments readily alter their proportions under certain influences. Thus during pregnancy they are all elongated; in posterior displacements the utero-sacral ligaments are stretched, and in anterior inclination the utero-vesical ligaments are similarly affected. As the antithesis of this fact, prolonged absence of function causes contraction in these structures; thus in anteversion the utero-sacral ligaments are generally shortened, and there is no doubt that the round ligaments are similarly altered.

Anteflexion.

Definition.—This, which is one of the most frequent of all uterine displacements, consists in a bending of the organ so that the fundus, the cervix, or both, are bent more or less sharply forwards.

Varieties.—There are three forms of anteflexion: first, corporeal flexion; second, cervical flexion; third, cervico-corporeal flexion.

1st. The cervix being normal in position the body is flexed;

2d. The body being normal in position the cervix is flexed;

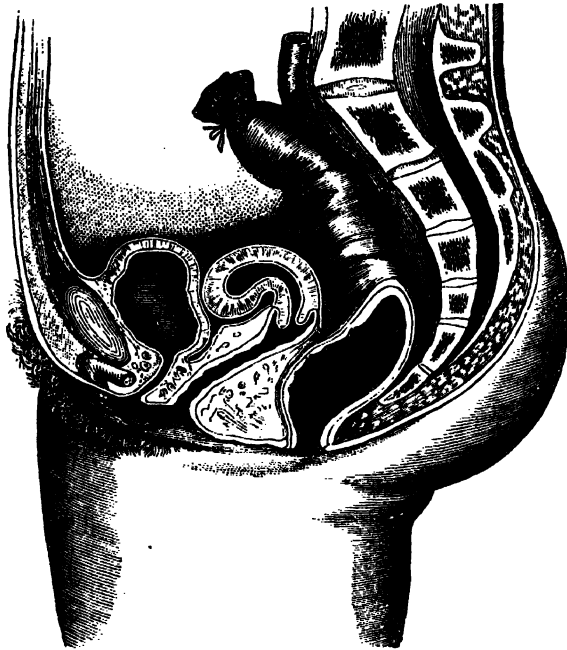
3d. Both are flexed forwards.

The lines represented in Fig. 150 will serve to show the deviations which may affect the axes of both body and cervix.

These varieties are neither arbitrary nor unnecessary. The existence of each may readily be verified at the bedside, and treatment should always be materially modified by the peculiarity of the deviation. It appears to me that a neglect of them and the fixation of attention upon flexure of the body alone has seriously retarded progress in treatment. No one can intelligently treat anteflexion without regard being had to

the variety of the disorder to which he is called upon to adapt his mechanical appliances.

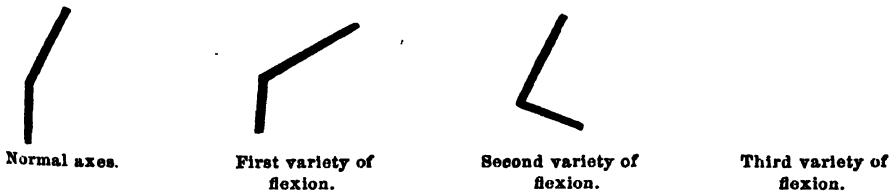
FIG. 149.



Anteflexion.

In addition to these there is a rare form in which the cervix is flexed forwards and the body backwards, but it is difficult to represent the axes of this variety in a diagram.

FIG. 150.



Symptoms.—A certain degree of this displacement may exist for years without the development of symptoms. Very generally, however, obstruction to venous return at the point of flexure produces congestion which increases the displacement, disturbs the nervous system, and disorders uterine functions. Then the following symptoms develop themselves :—

- Pain over hypogastrium and in groins and back;
- Irritable bladder;
- Leucorrhœa;

Dysmenorrhœa;
Sterility;
Nervous disturbance and despondency;
Pain on locomotion;
Menorrhagia;
Tendency to abortion;
Pain on sexual intercourse;
Pelvic neuralgia;
Sense of depression at the epigastrium.

In some cases there is a morbid and invincible aversion to walking, partly arising from physical and partly from mental causes. I have, in several cases, seen women who had been bedridden for three and four years rapidly restored to their powers of locomotion by restoration of the uterus to position, and its retention by an efficient pessary.

Dr. Hewitt mentions the retention of secundines after abortion in cases of ante flexion, and their putrefaction in utero, and advises as treatment restoring the organ to place, when expulsion at once occurs.

Physical Signs.—As the finger passes into the vagina and touches the cervix, nothing abnormal will usually be discovered. But as it sweeps along the anterior wall of the uterus, about the os internum a protuberance will be met with which presses upon the bladder. The finger which has thus far explored being kept in contact with this mass, the disengaged hand should then be laid upon the abdomen and made to depress the anterior abdominal wall so as to approximate the finger in the vagina. By this means the shape, size, and sensitiveness of the body may be ascertained. The diagnostician is, however, still in doubt whether the enlargement may not be one due to fibrous tumor or cellulitis. This point he settles by placing the patient on the side, introducing Sims's speculum, and gently probing the uterus to the fundus. Giving to the probe the curve which by vaginal touch he has been informed is that of the uterus, he carefully passes it in. Should it not proceed without obstruction, he withdraws it, alters the curve, and tries again. Having succeeded in introducing it, he learns the course of the uterine canal, its length, and the sensitiveness of its walls. Should the probe have entered the mass felt through the vagina, that mass is the uterine body. Should it go in the normal axis or backwards, it is not the uterine body, but some growth in contact with it. In pure cervical flexion the neck will be felt sharply bent forwards and in the double form both neck and body will be found flexed.

Prognosis.—The prognosis as to cure will depend upon certain circumstances which I will proceed to enumerate.

(a) It is better in multiparous than in nulliparous women, because the vagina in the former more readily admits of the use of mechanical supports, and because it is acquired and not congenital.

(b) It is better in pure corporeal ante flexion than in those varieties in which the cervix is affected.

(c) Where the cervix is thrown far back and lifted high in the pelvis, the prognosis is decidedly unfavorable, and more especially if there exist only a scanty vaginal pouch anterior to the neck.

(d) If the flexion be of reducible kind, prognosis is favorable; if the contrary, it is by no means so.

(e) The prognosis of congenital flexion is almost a hopeless one, unless the knife be resorted to.

(f) Of all the cases except the last the prognosis is most unfavorable in those in which the vagina joins the cervix very low down, near the os externum, and where the uterus is held high in the pelvis.

The shibboleth of the subject of prognosis as to cure is, however, this: if the flexion be entirely reducible, the case may be cured; if it be not so, it will in all probability prove incurable.

As regards the general health of the patient, the prognosis is not usually bad, but enlargement of the uterine body may result from ante flexion, and its consequences are commonly sterility, vesical irritability, dysmenorrhœa, and leucorrhœa.

Treatment of Anterior Displacements.—The first point which the practitioner should settle before commencing treatment, is whether the displacement is the main source of existing morbid phenomena, or whether these are due to some disease which underlies that condition. If he be led to regard it as merely a coincident or resulting condition which is producing no annoyance, of course the primary disorder must take precedence of it in treatment. It is, however, futile to assume the position that not the displacement, but its cause, must be the main object of attention; that, if endometritis, subinvolution, or a fibroid be its cause, they, and not it, must be treated. Nothing so surely prevents success in the management of such cases as the carrying into practice of the theoretical view that support must be confined to cases of pure, uncomplicated displacement. It is very often required where this is a result or complication of other disease. We are called upon to alleviate one of the most annoying symptoms of disease here, as we are in so many other instances. Pessaries are frequently required by the uterus as splints are by a fractured bone, not absolutely as a means of cure, but as adjuvants in treatment, by which rest and freedom from pain can be procured while the healing process advances.

Means for Reduction.—In the restoration of an anteverted uterus to its place, difficulty will rarely be experienced, for, unlike retroversion, the displacement does not often become complete. Even when it does so, reduction may be easily accomplished. When it proves difficult, the bladder having been emptied by the catheter, the patient should be placed upon her back on a hard bed or table, and all tight clothing removed

from the abdomen. The operator having oiled two fingers should then pass them into the vagina, and press their tips against the body of the uterus, which will have forced the walls of the bladder down before it. The fingers of the left hand being thus employed, the right should be laid upon the abdomen, so as to push up the abdominal viscera and uterus when reduction is attempted. The patient is now directed to fill the lungs with air, and then to expel it gently by a prolonged expiratory act. As this expiration is being finished, the operator presses up the body of the uterus by the fingers in the vagina, and the abdominal viscera and fundus by the hand on the abdomen.¹ He will generally succeed at once in replacing the organ. Should he not do so, he should repeat the process as above described, until the end is attained. Of course where the dislocation is partial, restoration may be much more easily effected; but in this case it accomplishes nothing, for no sooner does the force applied cease, than the organ again falls out of place. As the fundus is lifted by bimanual manipulation, the hand on the abdomen keeping it up, the finger in the vagina should be placed behind the cervix, and this part be pulled forwards towards the symphysis.

Some practitioners rely for cure upon the daily restoration of an anteverted or retroverted uterus, but hopes thus based will usually prove delusive. Where the version is complete and sudden, a return to the normal position may be final; but rarely have I seen it so result where the displacement was incomplete and chronic.

The method just described is, unless the uterus be bound down by false membranes, very generally successful in anteversion. In anteflexion also, where the displacement is one of reducible character, it is often all that is required. But in cases of anteflexion irreducible in character or difficult of reduction, more efficient means must be resorted to. These may be enumerated as the uterine sound, Elliott's repositor, Jennison's sound, and Wallace's spring tent, or laminaria tents.

Of course such restoration is only temporary, but even that benefits uterine circulation and improves the nutrition of the enfeebled concave wall. I have elsewhere likened the flexed uterus to a bent twig. The replacement of the former may be compared with the straightening of such a twig by the forester, and the use of a pessary to the employment of the supporting splint which he binds to the growing tree and by which he strengthens its weak side.

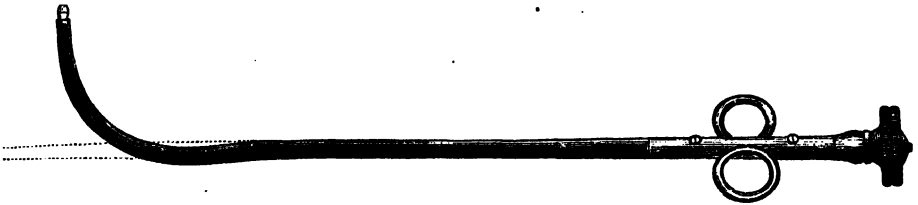
The uterine sound being introduced to the fundus, not much curved, but as straight as it can be made to pass, the handle being held in one hand, the tips of the fingers of the other should be pressed against the shaft of the sound near the middle, and they being made a fulcrum, the handle

¹ The operator should be very sure that the anteverted uterus is not bound down by false membranes before applying force for its replacement.

should be carried to the symphysis. By this manœuvre the flexed fundus is elevated, and at the same time carried towards the hollow of the sacrum. This point being reached, the sound should be very gently rotated, and complete retroversion with partial retroflexion of the uterus accomplished. This should be done with the utmost gentleness, and as I have described, not by a sudden rotation of the flexed organ, which forcibly sweeps the fundus around the superior strait of the pelvis.

Sims's speculum being introduced and the cervix caught by a tenaculum, Elliott's sound, shown in Fig. 151, may be carried quite curved

FIG. 151.

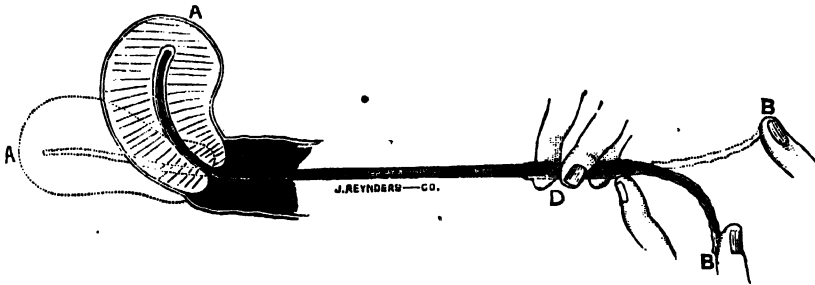


Elliott's uterine reposer.

into the flexed uterus and straightened by the action of the screw at its lower end.

A method of reposition which I prefer to these in ante flexion is that by the use of Jennison's sound, Fig. 152.

FIG. 152.



Jennison's sound.

Pressure upon the lower extremity of this causes the upper to bend sharply so that it readily enters a flexed uterus. Then reversal of this pressure lifts the flexed body, and not only straightens the uterine axis but creates retroflexion.

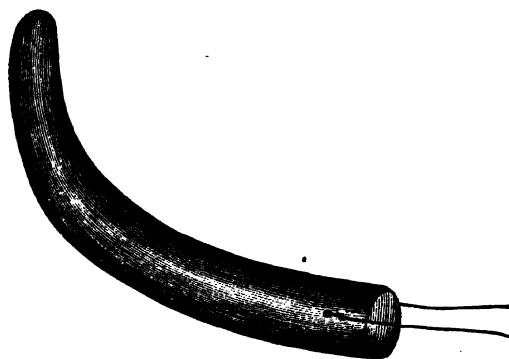
Every succeeding exercise of the uterus in this straightening process renders reposition easier, improves the nutrition of the flexed wall, and benefits the circulation in the organ. After this has been done four or

five times the second indication should be attempted, keeping the uterine body in position.

In a large number of cases of ante flexion, however, even these means of replacement prove unavailing, and the deformity of the uterus is susceptible of relief by two plans of treatment only : that which, by uterine tents and the intra-uterine stem, forcibly straightens the bent organ ; and that which, by the knife or scissors, renders the canal straight without reference to the relations of neck and body. Such cases being commonly congenital, one wall is well developed by excessive growth, while the other is dense, rigid, atrophic, and unyielding. They may, however, result from prolonged accidental flexion, with development of slight attacks of peritonitis ; even without the last, indeed, for cicatricial retraction of the atrophied section of connective tissue has been found by Klob under these circumstances.

One of the most effectual means of meeting the difficulties of irreducible flexion is the use of the spring tent of Dr. Ellerslie Wallace, of Philadelphia. He passes through a canal made in a piece of carbolized sponge a small piece of watchspring and compresses the sponge so as to make the tent curved as represented in Fig. 153.

FIG. 153.



Ellerslie Wallace's spring tent.

In this condition it is passed into the flexed uterus, and as the sponge softens, the spring erects itself and straightens the uterus. All the dangers attending the use of sponge tents attend the use of this, but no more. It may be practised once a week until three or four tents are used, or it may be used once and be followed by the intra-uterine stem.

The same end may be obtained by moistening in hot water a laminaria tent up to the point of bending, and passing this into the uterus, and keeping it there until it fully expands.

One very important fact, however, which should be constantly borne in mind in connection with ante flexion is, that there is a class of cases of irredu-

cible flexions which is incurable. The practitioner, unwilling to admit this to himself, or not appreciating the fact, begins treatment from a conventional idea that such is his duty. But the case proves far too obstinate for the ordinary local treatment; tents will not cure it, and trachelotomy, not fully meeting the mechanical indications, fails likewise. If the patient passes the ordeal without being attacked with peritonitis or cellulitis, she in time gives up all efforts at cure, or seeks the advice of another physician.

Means of Retention in Position of a Uterus Anteriorly Displaced.—These should be based, like those adopted in all other uterine displacements, as far as possible upon antagonizing the influences which produce and perpetuate the aberration from the normal position. The repetition of this fact, and of the means for developing the principle in connection with the various displacements, may prove tedious, but I offer no apology for this, for the great advantage which will result to the student from following this course will abundantly justify me. It will be said too, by the many who prefer empirical to scientific methods, that the plan pursued is based upon theory which is not applicable at the bedside. Let this question be put to the test of experience, and the student will find that the mere direction of the mind into proper channels of thought and investigation will give the plan value and induce him to adopt it.

In every case of anterior displacement let the practitioner endeavor to find out which is the main element concerned in its production, but at the same time let him remember that this one has almost surely developed others which are scarcely less important as factors. In most cases, therefore, he will be called upon to direct his attention to all forms of the pathological influence about to be mentioned.

All increased weight of the uterus should be treated by appropriate means; inflammation and its results by methods already mentioned, hyperplasia and hypertrophy by means adapted to their management, and laceration of the cervix by trachelorrhaphy, etc. The fulfilment of this indication alone will sometimes effect a complete cure of anteversion. Whether it does so or not, the next should always receive attention.

Pressure from above should be removed by carrying the weight of the clothing upon the shoulders, by skirt-supporters; pressure of the intestines, by prohibition of tight clothing, the use of an abdominal supporter, and the avoidance of injurious muscular effort.

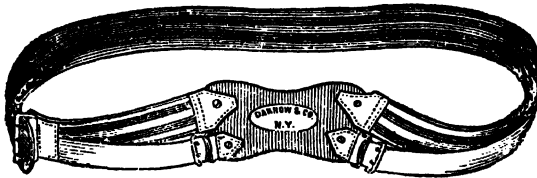
The dorsal decubitus in cases occurring suddenly, as, for example, during pregnancy or after labor, is of great value, and even in chronic cases is an important adjuvant to treatment by pessaries. In the commencement of such treatment at least, it should be always adopted, for two or three hours every day, at mid-day, for the purpose of affording a temporary rest to the parts.

In proportion to the disadvantages resulting from corsetting the upper segment of the trunk, are the advantages to be derived, in these cases,

from thus acting upon the lower. When the abdominal walls are lax and yielding, and do not properly sustain the viscera, they fall upon the fundus uteri, and tend to produce and keep up anterior obliquity.

No one can deny that by a well-fitting abdominal supporter, tone is given to the lax walls, and that the intestines, not the uterus, are sustained. I have already stated that many are prejudiced against this means and decry it as absolutely injurious; but I see it too plainly and certainly productive of good results in daily practice to admit of any doubt in my mind concerning it. Dr. J. C. Nott offered a very plausible explanation of the fact that in some women benefit follows the use of abdominal supporters, while in others absolute injury results from their employment. "If the patient be emaciated," said he, "and the abdominal walls retracted or even flattened, the supporter will depress and not sustain the uterus. On the other hand, if the woman be corpulent, the greatest support will be yielded by its application." I have employed for this purpose with very great advantage an abdominal pad or truss, which is at the same

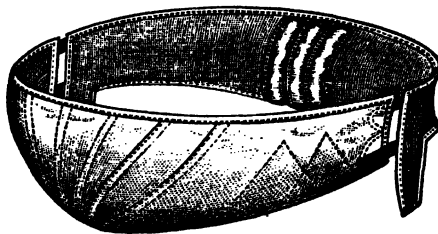
FIG. 154.



Abdominal pad of wood or cork.

time simple, inexpensive, and efficient. It consists of an ovoid block of cedar, pine, or cork, five inches long by four inches wide. This is convex upon the surface to be placed next the body, and flat on the opposite side, and is held in place by an elastic band or slender strip of steel covered

FIG. 155.



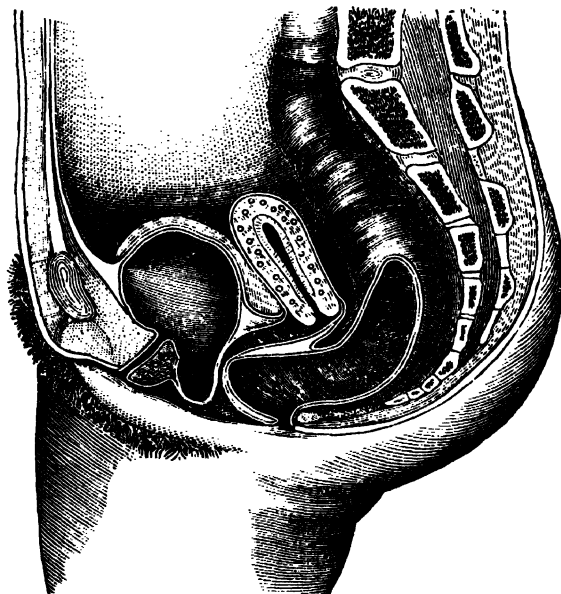
Abdominal supporter.

with leather, like an ordinary male truss. The pressure made resembles that of the hand, and, as soon as patients become accustomed to it, which it should be borne in mind may take a little time, gives great comfort. Another very efficient one is shown in Fig. 155.

Traction upon the uterus from below, if found to exist, should be removed by perineorrhaphy alone or combined with colporrhaphy, or it may be obviated by the use of a pessary which sustains vagina, uterus, and bladder.

Fig. 156 shows how loss of power in the perineum will result in prolapse of the anterior vaginal wall, how the bladder will in consequence prolapse, and how the upper portions of the uterus will follow it, anteversion resulting, and how perfect repair of the perineum will remove all traction from the uterus, and allow it to resume its place in the pelvis.

FIG. 156.



The perineal body destroyed, both rectal and vesical walls descend

Loss of the normal supports of the uterus should be overcome by the use of general and local tonics, developing the retentive powers of the abdomen, and by the use of pessaries. Astringent vaginal injections, sea-bathing, and the internal use of vegetable and mineral tonics are unquestionably of value.

By the development of the retentive power of the abdomen, a great deal can be done for replacement and support of an anteverted uterus. Every morning and evening the patient should place herself flat upon the back upon her bed, with the hands clasped over the head and the heels touching the buttocks. Then she should raise the pelvis as high as possible, and sustain it for a few moments, the shoulders and soles of the feet alone touching the bed. Letting the pelvis slowly descend, she is to repeat this a half dozen times. The movement too for strengthening the

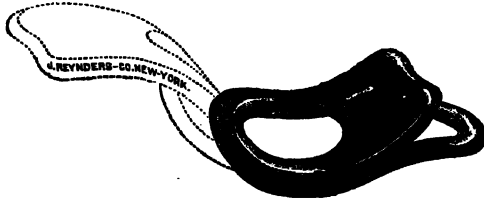
abdominal muscles mentioned under treatment of prolapse should be practised here, as well as the general exercises indicated there for the full development of the thoracic and dorsal muscles.

Pessaries.—What is desired of a pessary in sustaining the anteflexed or anteverted uterus is this: to make gentle pressure on the base of the bladder above the cervico-corporeal junction, and as near to the fundus as possible, to supplement the vesico-uterine ligaments, and at the same time not to injure the vagina by excessive pressure at this point. It is by no means easy to make an instrument answer these requirements; it may either keep the uterus in place at the expense of a degree of force which will create a solution of continuity in the vagina, or it may, when possessed of too little power, allow the fundus in spite of it to fall forwards. The use of pessaries for this displacement requires a vast deal more skill, mechanical ingenuity, and patience than is necessary in those of posterior variety. Even with every precaution, cases will commonly occur in which the parts will be injured by pressure; and without precautions the means is one which is attended by absolute danger. In cases in which pelvic peritonitis has preceded the displacement, the danger is so marked that treatment by pessaries, either should not be adopted at all, or, if attempted, should be limited to the most cautious trials.

The diagnosis having been made, and it having been decided that retention of the uterus in position is not attended by danger on account of former pelvic peritonitis, and that the displacement results from no condition removable by operation, the treatment should be commenced in this way. The intestines should be evacuated by a cathartic, all weight removed from the fundus by abdominal and skirt supporters, and the patient enjoined to take very moderate exercise and to avoid all violent efforts. Every night and morning she should use the warm vaginal douche, not only at first, but throughout the duration of treatment, to prevent irritation from it. Before the introduction of a pessary, the uterus should have been several times replaced by conjoined manipulation and held in position for two or three minutes at a time. At the end of this period, if the displacement is readily reducible, and it requires no great force to sustain the uterus, the anteversion pessary represented in Fig. 157 may be introduced, and the patient allowed to walk about. Should it give no pain, she may wear it home, even if going to a distance from the practitioner's residence, for she can herself remove it on the first menace of injury. In three or four days the instrument should be examined. If it have given pain or have left its mark upon the vaginal walls, it should be changed at once; if not, it may be left for a week; then for two weeks; then for a month; and afterwards for a still longer time, two months, for example, without examination. The pessary here advised is represented open for withdrawal by the dotted lines, and closed

as it should be in the vagina in introduction. The piece which sustains the fundus is large and smooth, so as not to injure the vaginal wall. When the pessary is drawn upon by means of its lower branch, this piece falls back of itself, and thus the instrument is susceptible of removal. The

FIG. 157.



Thomas's anteversion and anteflexion pessary.

possibility of removal by the patient is an important element in an anteversion pessary, for she may go away after its introduction and suffer agony in a few hours, and, should she be unable to remove it, inflammation might result. Even if she obtain medical aid, it is often very difficult for a physician ignorant of the peculiar construction of one of these instruments to remove it. I never consent to a patient who is wearing one leaving my office to go out of the city without first making myself sure of her ability to remove it herself. The pessary here represented is introduced closed and carried to and behind the cervix just as one for retroversion is. As the piece intended to support the fundus is resisted by the pubes, the perineum is depressed and it is carried under it. The instrument is opened as shown in the diagram, not for its insertion, but for its withdrawal. The anterior, projecting piece may be made longer or shorter as greater or less elevation of the uterus becomes necessary. Fig. 158 represents this instrument modified so as to consist of a permanent and immovable projection on the anterior face of a Hodge or Smith pessary. In the case of a virgin it is often difficult to withdraw and introduce these, but in a married woman, and especially in a parous one, it is easy of application.

FIG. 158.



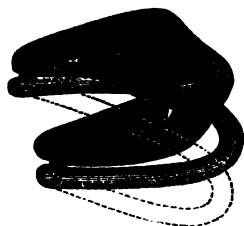
Thomas's anteversion pessary, with fixed projection.

Another instrument which I employ very commonly, both in anteversion and anteflexion, is that shown in Figs. 159, 160, and 161.

The instrument is here presented closed. It is introduced open. Upon pulling upon the bow which presents at the mouth of the vagina, the piece which sustains the uterus falls back, and it can readily be withdrawn by patient or physician.

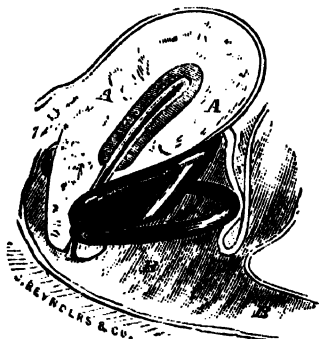
Fig. 162 represents a modification of the two instruments which precede it.

FIG. 159.



Thomas's anteversion pessary
as it appears in the vagina.

FIG. 160.



The same instrument
in position.

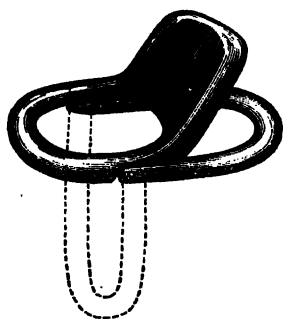
FIG. 161.



The same instrument
as it appears on removal.

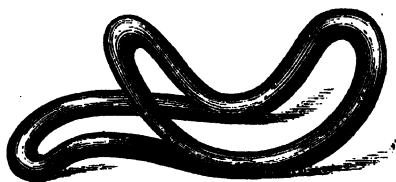
Fig. 163 represents an elastic pessary for anterior displacements, made of spiral wire and strips of whalebone covered with gutta-percha, by Otto and Sons, of this city. The whole pessary is so pliable that it can be introduced and withdrawn with perfect ease.

FIG. 162.



Thomas's anteversion and antelexion
pessary.

FIG. 163.



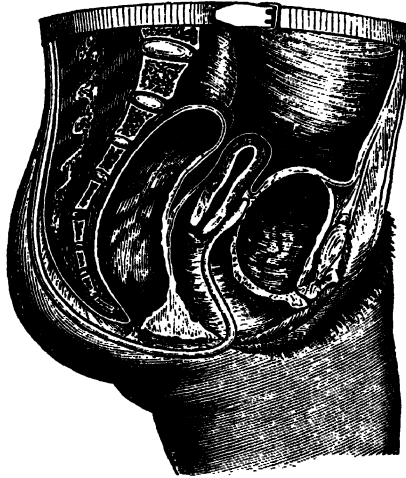
Thomas's elastic pessary for anterior
displacements.

If the attending physician possess only little skill in the use of pessaries, or if the uterus be replaced with difficulty, and sustaining it appear to require force, he had better not employ an internal pessary, but limit himself to one connecting externally with a band. Support may be given to such a pessary by a stem arching over the perineum, as shown in Fig. 164. This displays in position a modification of Cutter's retroversion pessary.

The upper extremity of this form of Cutter's pessary has a bulb attached to it, and is so bent forwards as to strike the base of the bladder, anterior

to the cervix. This is introduced by the practitioner, and its method of introduction and removal fully explained to the patient. She is instructed how to remove it upon retiring every night, and to replace it before rising in the morning. By it the cervix is pulled forwards, the utero-sacral liga-

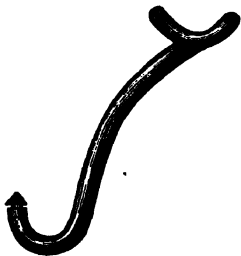
FIG. 164.



Anteversion pessary supporting uterus.

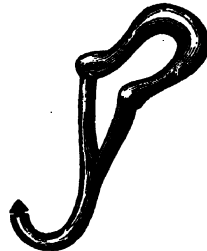
ments stretched, a tolerance of a foreign body established, and a pouch or pocket created anterior to the cervix, which will accommodate in time the pessaries already depicted, if the practitioner desires to try them. The bulb pessary with external attachment may in any case be used as preparatory to an internal instrument. After the former has been used for a

FIG. 165.



Cutter's T pessary for anterior displacements.

FIG. 166.



Thomas's modification of Cutter's pessary.

month or so, the latter will generally be applicable. One having experience with these two instruments can almost always tell without experimentation which will be appropriate. If there be a pouch anterior to the cervix when the base of the bladder is pressed up by the finger, the in-

ternal pessary will be tolerated. If there be none, and the tissue resist pressure by the finger, it cannot be employed until space has been created by the other instrument.

To facilitate the proper introduction of this instrument, and to prevent the supporting portion from being placed behind the uterus instead of in front of it, Dr. Cutter has devised the instrument shown in Fig. 165, and I have modified it as shown in Fig. 166.

Even if the patient made an effort to place these instruments incorrectly, it would be accomplished with difficulty. Their beneficial results in these cases are unquestionable except by those whose prejudices or incapacity have defeated them.

Cases will occasionally be met with in which the parts are so sensitive that the hard bulb of these pessaries cannot be borne. Under these circumstances, they can be with great advantage replaced by soft balls of very fine sponge, until the reposition of the uterus and removal of congestion which is thus effected render solid bulbs tolerable.

FIG. 167.



Graily Hewitt's anteversion pessary.

Fig. 167 represents the very excellent pessary of Dr. Graily Hewitt. I have employed it very extensively, and esteem it highly.

I have also in some cases found the pessaries of Guerung and Fowler answer very well in anterior displacements. The latter of these is shown in Fig. 168.

He who expects from these methods extraordinary results will surely be disappointed. In a certain number of cases failure will attend all means thus far devised, not excepting surgical procedures. My experience, however, warrants me in saying that a persevering resort to the treatment here advised will reward the gynecologist by success in many cases. After overcoming this form of flexion, a Meigs's ring pessary should be worn for a long time to prevent relapse. After overcoming this, and all other forms of flexion, it is well to dilate the cervical canal by means of graduated sounds, as there is generally more or less contraction of it.

I would especially impress the importance of not relying exclusively upon any one of these pessaries or internal supporters. Their use should be combined with external means calculated to remove pressure from the fundus. By this combination the happiest results may be confidently anticipated from efforts at relief of this often distressing accident.

Before concluding, let me recapitulate the most important of the maxims embodied in this chapter.

1st. Never begin treating an anteverted uterus mechanically until satisfied that no periuterine inflammation exists; that bad symptoms present are due to the displacement; and that no condition susceptible of removal by medical or surgical means requires earlier and more prominent attention than retention of the uterus in position.

2d. Before using a pessary, act thoroughly on the intestinal canal, use warm vaginal injections freely, and replace the uterus repeatedly.

3d. Do not rely upon vaginal support alone, but aid it by avoidance of all pressure from above, and by using an abdominal pad.

4th. Pessaries are of the greatest value in treating anteversion, but require much more skill, are attended by greater danger, and are more apt to need frequent alteration than when used in posterior displacements. There is no comparison in the relative amount of difficulty in applying this means to the two varieties of displacement.

5th. Never use an anteversion pessary which the patient cannot remove, unless she keep within reach of your aid; always examine frequently to see if injury is being done to the vaginal walls, and never let a patient wearing one pass entirely out of observation.

6th. If no sufficient pouch exist anterior to the cervix for the accommodation of an internal pessary, create one by use of the external bulb pessary.

At the same time that I speak so strongly of the difficulties surrounding the treatment of these cases, and so repeatedly point out the dangers attending it, I must make this statement for those who have been dis-

FIG. 168.



Fowler's pessary for anterior displacements.

couraged by repeated failures: were I asked from the treatment of what class of uterine diseases I experienced the greatest satisfaction, and felt that I had accomplished most good for my patients, I should unhesitatingly reply—*anterior displacements of the uterus.*

In many cases of this variety of displacement, a great deal of relief may be obtained from merely lifting up the displaced organ in the pelvis without rectifying the anterior displacement, and for one who is not familiar with the use of anteversion pessaries, or has not at his command facilities for procuring good instruments, I really think that this, in the commencement of treatment, if not throughout its entire course, is the safer and better plan. Lifting the uterus may be accomplished by the ordinary ring pessary or Gariel's air pessary, and the simultaneous use of the abdominal pad of wood or cork. If the pad be used alone, and when the fundus uteri is behind the symphysis pubis, no good will result from it; but if the uterus be lifted so that the fundus becomes amenable to direct pressure, the benefit felt will be often very great.

As I have elsewhere stated, furnishing support to a uterus anteriorly displaced is much more difficult than to one which inclines posteriorly. As there are, therefore, men who to-day doubt the efficacy of support for the latter forms of displacement, there must be many more who entirely oppose that for the former. To both classes of objectors I would say, with a confidence resulting from a large daily experience, that the hostility to mechanical support in both varieties of displacement arises partly from prejudice and partly from want of skill on the part of the practitioner, who charges to the mechanical process shortcomings which really lie at his own door.

On more than one occasion I have heard the most unmeasured denunciations against anteversion pessaries upon the part of men who I found had been persistently using them upside down. Failing to give relief by instruments thus used, the illogical experimenters have been too willing to attribute to a method what was really due to an ignorant abuse of it.

In certain cases of anteversion, notably those requiring the energetic means recently mentioned for their reduction, pessaries resting in the vagina fail to accomplish the required purpose, and the use of more powerful means of support are resorted to.

Recognizing our poverty of resources in such cases M. Velpeau,¹ between thirty and forty years ago, conceived the very plausible idea of restoring the uterine axis to its normal direction, by introducing a stem to the fundus, and retaining it there. After experiment he abandoned it, and subsequently Amussat followed in his steps, both in essaying and casting it aside. In 1848, Prof. Simpson again brought it into notice in versions and flexions, and met with a warm ally in M. Valleix, of Paris.

¹ Discussion in Acad. de Méd., reported in Charleston Med. Journ. 1853.

The instrument known as the intra-uterine or stem pessary, unquestionably counteracts directly and immediately all flexions of the uterus. But it was found to cause peritonitis and death in a number of instances, and in consequence it was, for a time, almost entirely abandoned. So decidedly did experience appear to weigh against it that it became difficult to explain the encomiums once showered upon it by its advocates, and the remarkable cures reported from its use. Nonat declared that, carried away by enthusiasm, "*ils se sont laissés aller trop facilement sur le terrain glissant des illusions.*" Nevertheless, the method was never entirely cast aside, for none could hesitate to indorse the sentiment expressed by Malgaigne, in the discussion upon the subject in the Academy of Medicine in Paris, in 1852, that, "a treatment which Amussat, Velpeau, Simpson, Huguier, and Valleix had tried, cannot, should not, be considered as repugnant to common sense."

During the last ten years there has been evidenced, however, a growing inclination to return to this plan, and the last five have brought forth a number of reports favorable to it.

At a medical convention held in Innsbruck, Germany, in September, 1869, this subject received some attention. Späth, of Vienna, expressed his belief in the disadvantages of the intrauterine treatment of flexions, although he has found in some cases a total insensibility and an absence of reaction from the wearing of intrauterine instruments. Hugenberg, of St. Petersburg, advocated the use of Simpson's pessary in flexions, and declared his experience to be, that it was not only tolerated, but did great good when properly applied and retained for a sufficiently long time. More recently, Prof. Schultze, of Jena, advised the use of the intrauterine stem in certain obstinate cases, but, in a review of his publication, by Dr. Munde, in the *American Journal of Obstetrics*, it evidently appears that he does so with caution and reserve.

Prof. Olshausen, of Halle, likewise published his experience with the method. Of its character the reader can judge for himself, for the professor gives accurate data. Out of 297 cases of versions and flexions, 81 were treated by the stem and 5 were so treated for other conditions than displacement. Periuterine inflammation resulted in 7 cases; treatment was stopped on account of hemorrhage or pain 10 times; the stem could not be kept in place 3 times. Of 66 cases in which they did well, in 15 the results appeared to be permanent; in 18 improvement was great and lasted a long time; and in 17 "doubtful permanent results were obtained." In 11 sterility was cured. The stems were worn for periods varying from a few weeks to 22½ months.

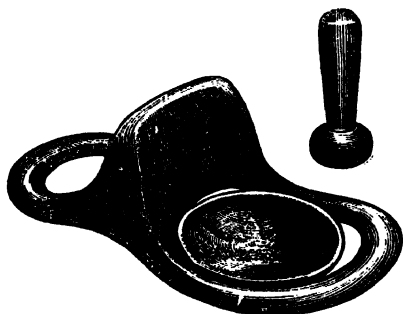
Drs. Savage and Chambers have both reported very favorably upon this plan in the *Obstetrical Journal of Great Britain and Ireland*, to which the reader is referred for their interesting articles. I would likewise refer to

excellent essays by Dr. Routh¹, of London, and Dr. Van De Warker,² of Syracuse.

Before the use of this method careful examination should be made as to the previous existence of periuterine inflammation. If any be found existing the uterine stem should be avoided.

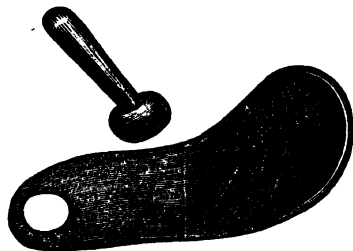
A great variety of instruments have been employed for keeping the stem in place. Some are complicated, others stiff and unyielding, while most are not susceptible of removal by the patient, and are therefore wanting in the main element of safety. I would recommend the instrument which I employ for this purpose as not subject to any of these objections. It consists of two parts, a stem of solid glass, two to two and a half inches long, and ending below in a round bulb as represented in Fig. 169. This being introduced into the uterus, it is supported by the ante-flexion pessary shown in Fig. 169, or, if difficulty be found in using this, by an ordinary Hodge pessary, between the branches of which a cup has been placed, as shown in Fig. 197, or by a disk of vulcanite shaped like the Hodge or Smith pessary, as shown in Fig. 170.

Fig. 169.



Ante-flexion pessary supporting intra-uterine stem.

Fig. 170.



Glass stem supported by disc pessary.

The stem ending in a round bulb rests upon the surface of the pessary, and changes position with every movement of the uterus. It must be remembered that it is not used for anteversion but for ante-flexion, and that stability of the base of the stem is not desirable. Just above the shoulder a small hole may be made through the stem through which a silk thread is passed which hangs from the vulva. Upon the first evidence of trouble the patient draws out the loosely fitting pessary, then making traction upon the thread removes the stem.

Before introduction of the stem, the cervix, if found to be too contracted for it to pass, should be dilated by one or more tents, which for the time straighten the uterus and dilate the cervical canal. After introduction the patient should be kept in bed for three or four days, and, upon leaving it, should be careful in her movements for a week or two. She should be

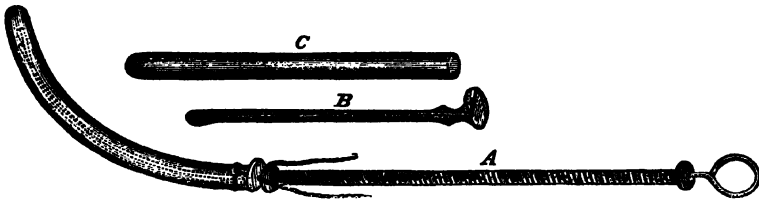
¹ London Obstet. Trans.² Amer. Gynecolog. Trans.

directed to remove the tent upon the occurrence of pain, chilliness, or feeling of general languor or discomfort. Even the most ardent advocates of stem pessaries will admit the propriety of these precautions, and even their bitterest opponents must allow that with them as a safeguard, in certain cases they should be resorted to. To cast them entirely aside when such high authority recommends them, would be irrational and unjustifiable. To use them freely in the face of such evidence as we possess would be reckless and unwarrantable.

It requires skill in introducing the pessary after introduction of the stem before the latter falls from its place. A Sims's speculum is a *sine qua non*; the stem should be held in place by Sims's depressor, and the pessary be slid into place upon this. In this way the manœuvre is easy.

I am opposed to the exhibition of instruments which I have not myself fully tried, but the stem pessary of Dr. H. F. Campbell impresses me so favorably that I depart from my rule and present it here.

FIG. 171.



Campbell's soft-rubber spring-stem pessary. A. The soft-rubber stem and spring prepared for introduction. B. Shows the spring separately. C. The rubber cap or hood.

It will be seen that this consists of a soft-rubber tube and watch-spring. It is introduced bent upon itself by means of a sound, and this being withdrawn it straightens itself under the influence of the protected spring.

But in a certain number of cases even the intra-uterine stem fails. Then the gynecological surgeon, following the example of the general surgeon, gives up striving after an end unattainable by minor means, and resorts to the knife for relief.

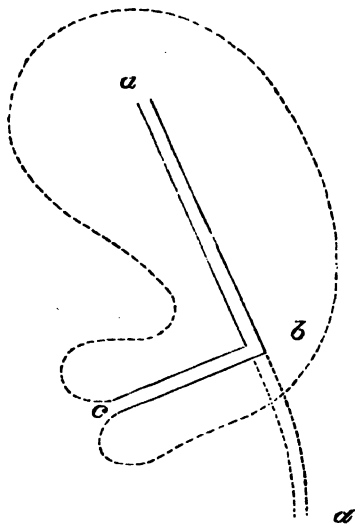
Should the patient not tolerate the intra-uterine pessary with comfort, should the flexion not yield to the treatment by it, or should the practitioner prefer to adopt operative procedures, an operation devised by Sims is at his disposal not intended to cure the displacement, but to remedy its resulting cervical obstruction, leaving the disorder of position unchanged.

Operation for Irreducible Cervical, Corporeal, or Cervico-Corporeal Flexion.—If a piece of stiff tubing be bent, the calibre of its canal will be obliterated at the point of flexure in proportion to the acuteness of the angle created. In the same manner is the uterine canal affected by the lesion under consideration. The obstruction created in this way prevents the free escape of menstrual blood, which distends the cavity of the uterus and forms clots within it, and these at each menstrual period are expelled

by uterine tenesmus. In consequence of this, inflammation of the mucous lining of the uterus arises, that in time may produce areolar hyperplasia, which favors further displacement by the increase of uterine weight attending it. The effort required for expelling clotted menstrual blood creates painful menstruation, and the same obstruction which retards egress of fluids interferes with ingress and prevents conception.

Having been forced to accept the displacement as an irremediable evil, we now endeavor to strike at one of the sources of the pathological series which results from it by overcoming obstruction at the point of flexure; in other words, by substituting a straight for a crooked canal. This can be

FIG. 172.



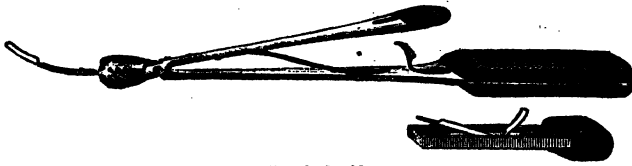
Schematic diagram, showing the creation of new uterine axis. *a b* represents the axis of the body; *b c* represents the axis of the neck; *b d* represents the axis created by incision.

accomplished by cutting through one wall of the cervix. Having thus overcome cervical obstruction and consequent accumulation of fluids in utero, do we at the same time remove the tendency to mechanical congestion of the body of the uterus? Not entirely, but if we secure the results of cervical section as we may ordinarily do by subsequent use of the intra-uterine stem, we accomplish to a certain extent both results.

If the posterior uterine wall, bent forward as shown by the line *c b*, Fig. 172, in a case of ante flexion, be cut towards the vaginal junction so that a probe will pass into the uterus in the direction of the line *a d*, the obstruction resulting from the existence of an angle will be removed, and thus fluids would have free entrance and exit, for instead of turning the angle at *b* and escaping at *c*, they would at once escape at *b*.

The operation which accomplishes this result is an exceedingly simple one, and is thus performed. The patient being placed in position, and Sims's speculum introduced, the cervix is seized and drawn down by a tenaculum. Then, by a long slender knife, that of Sims's is the best, an incision is made as far as can be conveniently done without involving the vaginal junction, which will probably be above the point *b* in Fig. 172. The blade of Sims's knife, represented in Fig. 173, is now introduced through the os internum, and the tissues are cut so as to lay open the posterior wall of the cervix. A little shoulder will, as Dr. Emmet has pointed out, be generally found to exist on the anterior wall of the canal, just at the angle made by flexure of this wall. Towards this the blade of the knife should now be turned, and it should be cut through.

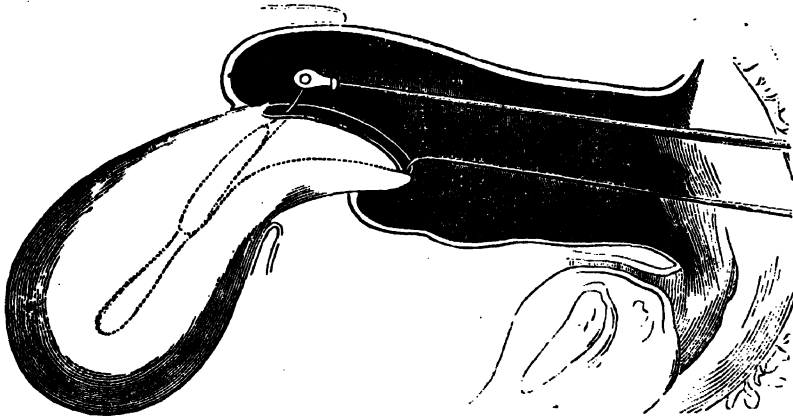
FIG. 173.



Sims's knife.

In this operation the knife alone should be used. None of the uterotomes are at all appropriate. Just after the operation the glass stem

FIG. 174.



Posterior section of the cervix. (Sims.)

shown in Fig. 170 should be introduced so as to occupy the whole cervix from os internum to os externum. Under this a firm tampon of wet carbolized cotton should be placed. In forty-eight hours the tampon should be removed, and, if any sign of hemorrhage be present, reapplied. If not, one of the sustaining pessaries shown in Figs. 169, 170, or 197 should be introduced, the vagina be thoroughly syringed with warm carbolized water twice daily, and the patient be kept in bed for a fortnight. The stem and pessary should be worn, if no evil symptoms develop, for two or three months. Then, after cicatrization has fully occurred, they may be removed with a reasonable hope that the canal will remain pervious.

Success in this operation depends less on its method of performance than on the persistent wearing of the glass stem until cicatrization has been fully accomplished.

Should an error be made as to the etiology of the displacement or the recognition of its complications, and this apparently trifling operation be performed during the existence of periuterine cellulitis or peritonitis, the gravest results may follow, and the sufferings of the patient be greatly aggravated. Indeed, had all the fatal cases which have occurred in consequence of this operation been published to the profession, as they should

have been, the list would, I think, be a startling one. I myself know of several, and have heard rumors of many others. It may be asked why this operation upon a part of the uterus which does not ordinarily resent surgical interference should so often be followed by dangerous consequences. My conviction is, that the operation *per se* is not attended by great danger. It is the performance of it when pelvic peritonitis exists in chronic form that has caused it to produce such bad results. Even a minor operation, performed in the face of a condition which should interdict the use of the uterine probe, may set up a train of symptoms which may lead to a fatal issue.

After these procedures for the cure of ante flexion which has for a long time been irreducible and was very probably congenital, conception is by no means common. Operations for this condition often effect relief of menstrual and amelioration of circulatory disorders; and they may even cure sterility, but he who practises them should beware how he makes promises to this effect.

It is very evident that at present a formidable wave of professional opinion is steadily advancing in opposition to this operation. Some of the very men who took exaggerated positions in reference to its value ten years ago are now emphatic in its denunciation. It is the old story of the swing of the pendulum! The operation should hold to-day just the position to which it was entitled ten years ago. Its merits are unquestionable; its place cannot in the interests of gynecology be left vacant. But as it did not deserve the encomiums of a former time, so it does not merit the depreciation which is aimed at it to-day.

One of its advantages has been, I think, lost sight of. Many cases of obstructive dysmenorrhœa, sterility, and inefficient menstruation, for which resort has been had to it with good effect, are due to an undeveloped state of the cervix, which, compared with the body of the uterus, is disproportionately small. Section, followed by the use of the glass cervical plug for two or three months, will often improve the nutrition of the cervix and result in its increased development.

CHAPTER XXVIII.

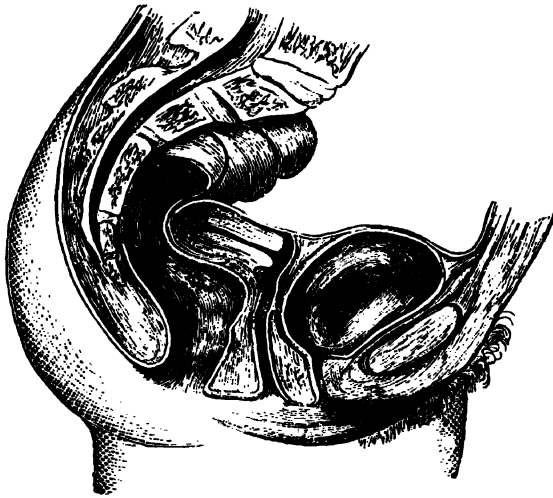
POSTERIOR DISPLACEMENTS OF THE UTERUS.

Retroversion and Retroflexion.

Definition and Frequency.—Retroversion consists in a posterior inclination of the uterus, so that the fundus approaches the sacrum and the cervix advances towards the symphysis pubis. As an idiopathic primary lesion, it is not common, but it is frequently symptomatic of neoplasms,

areolar hyperplasia, or other states which increase the weight of the uterus.

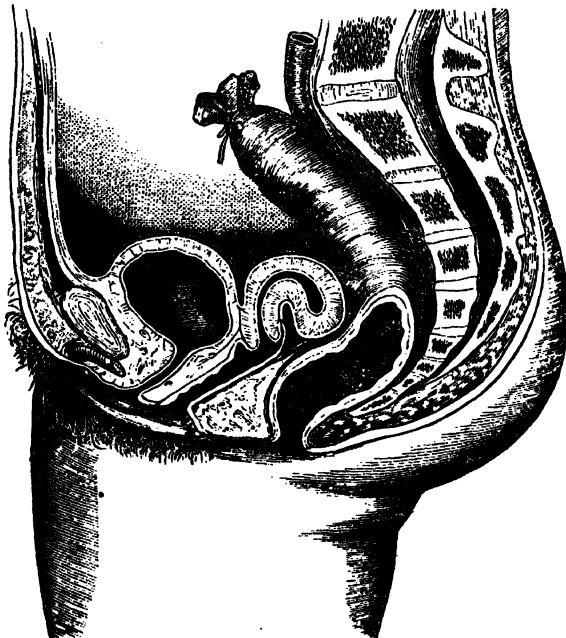
FIG. 175.



Retroversion of the uterus.

Retroflexion is said to exist when the body of the uterus is bent towards the sacrum so as to create an angle on the posterior wall.

FIG. 176.



Retroflexion.

Predisposing Causes.—The predisposing causes of posterior displacements are parturition, general muscular debility, and habits of indolence and inactivity.

Exciting Causes.—These may be classified under four heads :—

Influences increasing uterine weight.

- Fibroids;
- Subinvolution ;
- Areolar hyperplasia ;
- Pregnancy ;
- Congestion.

Influences dragging the uterus out of place.

- Adhesions from pelvic peritonitis or periuterine cellulitis ;
- Rectocele ;
- Subinvolution of the vagina ;
- Prolapsus of posterior vaginal wall ;
- Retroflexion.

Influences forcibly displacing the uterus by direct pressure.

- Severe succussion by blows or falls ;
- Muscular efforts ;
- Distended bladder ;
- Tumors ;
- Tight bandaging after parturition ;
- Tight and heavy clothing.

Influences weakening uterine supports.

- Parturition ;
- Destruction of power of perineum ;
- Prolapse of vagina.

Of all these causes the two most frequent are decidedly prolapse of the vagina, from subinvolution or ruptured perineum ; and areolar hyperplasia, commonly the advanced stage of subinvolution of the uterus. All the others mentioned are sometimes met with, but, compared with these, they are insignificant as causes.

As might be presumed from the natural obliquity of the uterus, anterior displacements not unfrequently occur as idiopathic lesions resulting from pressure of superincumbent viscera forced down upon the fundus by tight clothing or muscular efforts. Retroversion occurs in this way less frequently. It generally depends upon some pathological state in the uterus or its appendages. The third class of causes mentioned as displacing the organ by direct pressure may act through violent succussion, and induce sudden displacement with symptoms of most urgent character. Prolonged pressure from a distended bladder, or from a tumor anterior to or above the uterus, may likewise induce gradual displacement. A little reflection will explain how the management of parturient women, by British and American practitioners at least, favors the occurrence of the

accident. In the first place, it must be remembered that pregnancy combines in itself two of the influences which are productive of this condition, increase of uterine weight and relaxation of supports. It is no exaggeration to assert that the usual plan of management after parturition supplies one of the others which are mentioned above. The woman lying almost constantly upon her back, the heavy fundus naturally tends to fall backwards into the hollow of the sacrum. Many nurses insist upon this position, and often for days refuse the patient the privilege of lying upon the side. But this is not all, many a nurse's reputation among ladies rests upon her capacity for "preserving the figure" by tight bandaging. A powerful woman will often expend her whole force in making the bandage as tight as possible to accomplish this purpose. No one who has watched the process can doubt its influence in displacing the uterus by direct pressure. There is no practice connected with the lying-in room to which so much of almost superstition attaches as to the use of the obstetric bandage for preservation of the figure and prevention of hemorrhage. This is a repetition of what I have elsewhere stated, but the importance of the subject in my mind must be my excuse for dwelling upon it here.

If involution have gone on tardily and imperfectly, the woman is still more prone to have the uterus forced backwards. The round ligaments, which are composed of muscular structure similar to that of the uterus, are important agents in preventing this. It is highly probable that an arrest of retrograde metamorphosis affecting the uterus may likewise affect them, and leave them longer and less powerful than natural. "Hypertrophy of the two (round) ligaments," says Scanzoni,¹ "constantly accompanies a natural pregnancy; while, as we have ourselves had an opportunity to determine, in the case of a bicorned uterus, biparted, or bilocular, the ligament corresponding to the side on which was the pregnancy, was alone hypertrophied. . . . We remember many cases of women who have died after metritis or puerperal peritonitis, with whom one or both of the round ligaments were notably hypertrophied, and presented a lively red color, with a serous infiltration."

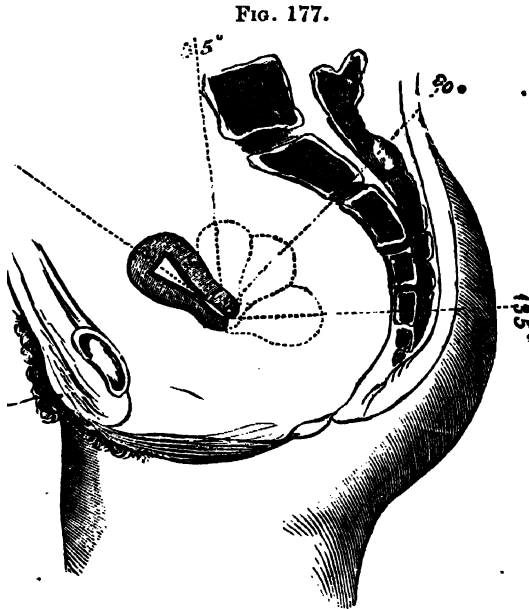
Not only as a result of pregnancy do these ligaments develop a condition which renders them prone to yield to traction from an enlarged uterus—Boivin and Dugès have observed hypertrophy in them, with dilatation of their vessels from chronic engorgement, fibroids, and even from ovarian tumors.

Varieties of Retroversion.—Retroversion may exist in slight degree, the uterine axis inclining so as to make with that of the superior strait an angle of 45° ; or it may incline to 90° , thus lying across the pelvis; or the cervix may be thrown up and the fundus descend so as to form an angle of 135° .

¹ Scanzoni, op. cit., p. 358.

These varieties constitute the first, second, and third degrees of retroversion.

Retroflexion also has been divided into varieties dependent upon the degree of intensity, but these are so entirely arbitrary that they may as well be ignored.



The degrees of retroversion.

Symptoms.—Posterior displacements produce annoying symptoms by creating congestion of the uterine body, obstructing the cervical canal, and causing pressure on the rectum, congestion of the ovaries, and reflex nervous manifestations. Through so many avenues of approach it may well be supposed that the symptoms are numerous. They are usually as follows :—

- Severe backache ;
- Weight in rectum with tenesmus ;
- Leucorrhœa ;
- Dysmenorrhœa ;
- Nervous disturbances ;
- Difficult locomotion ;
- Menorrhagia ;
- Tendency to abortion ;
- Pain on sexual intercourse ;
- Pelvic neuralgia ;
- Epigastric depression ;

Gastric derangement ;
 Uterine colic or tenesmus ;
 Sterility.

Many of these symptoms produce epiphenomena of their own, and thus increase a list which is already long.

Physical Signs.—The diagnosis is made by the following means :—

Vaginal touch ;
 Conjoined manipulation ;
 Rectal touch ;
 The uterine probe.

The patient lying on the back, the index finger is introduced to the cervix, which is found in its normal place. It is then swept over the base of the bladder, where nothing abnormal is observed. Then it is passed into the fornix vaginæ, and here a round tumor continuous with the ridge of the cervix is discovered. The disengaged hand is then placed on the abdomen, and made to approximate the finger in the vagina, so as to grasp the body of the uterus. If the abdominal walls be lax, this will yield good results, but not otherwise. The finger should now be carried into the rectum, in order to study further the character of the tumor pressing upon this canal. The patient being then placed upon her side and the speculum introduced, the uterine probe, which has been curved in accordance with the direction impressed on the mind by the sense of touch, is gently passed into the uterine cavity to the fundus, which completes the diagnosis.

Differentiation.—This displacement may be confounded with fecal impaction, fibrous tumors, cellulitis or peritonitis, extra-uterine gestation, a prolapsed and enlarged ovary, and prolapsed kidney. The careful practice of the four diagnostic methods mentioned will remove all doubts.

In certain very rare cases the kidney has been known to prolapse into Douglas's cul-de-sac and produce the most anomalous symptoms. In a case of my own in which a very obscure tumor existed posterior to the uterus, this diagnosis was made by Dr. Noeggerath in consultation. In accordance with his advice I placed the patient in the knee-chest position, and applied a good deal of upward pressure, when the tumor suddenly escaped into the abdomen. Support was given by a bulb pessary, and for a time my patient was relieved, but upon her return to her home in Virginia a complete relapse occurred. Dr. Noeggerath tells me that he has met with but one other such case. Of course the correctness of the diagnosis is doubtful. I am inclined to admit it from the peculiar symptoms exhibited, and by the fact that post-mortem examination proves that such a prolapse of a floating kidney sometimes occurs. The following account of such a case may be found in Braithwaite's Retrospect.

“Examining the body of a man who had died of phthisis, aged thirty-five, Dr. Isaacs found the left kidney located in the pelvis, its upper end being in

contact with the bifurcation of the aorta, and its lower touching the posterior surface of the bladder, and lying on the fifth lumbar vertebra, and first, second, and third pieces of the sacrum. Its right edge was in contact with the rectum, and the left with the iliac portion of the brim of the pelvis. There were three renal arteries, one coming from the aorta, and two others from the right common iliac. The kidney was of the ordinary size, but the supra-renal capsule was twice its natural size, and of the shape of a fig-leaf, and it occupied its normal position in the lumbar region."

Consequences of Posterior Displacements.—The post-uterine peritoneal space being much more extensive than the anterior, they proceed to a more aggravated degree than anterior displacements. The body sometimes descends to the upper extremity of the vagina, and instances are recorded by Rokitansky and Schott in which it penetrated the walls of the rectum and vagina, and forced itself into these canals. This of course is a very rare occurrence, but it is worthy of mention as showing how great is the pressure which a retroflexed uterus may exert. The ordinary consequences of the affection are—

Dysmenorrhœa ;
Endometritis ;
Sterility ;
Areolar hyperplasia ;
Pelvic peritonitis.

As rare complications may also be recorded, hematometra and hydrometra from imprisonment of fluids by obliteration of the canal by flexure at the os internum. Should pregnancy occur during the existence of this deviation, or retroflexion complicate pregnancy, and the fundus be incarcerated below the promontory of the sacrum, abortion will result. This cause of that accident is so very common that it should be suspected and examined for in every case of habitual abortion.

Prognosis.—There are three conditions which render the prognosis of this condition unfavorable : where the uterus is bound down by strong adhesions ; where the organ contains in its parenchyma a fibrous tumor ; and where the vagina is attached to the cervix so near the external os that no pessary can rest posterior to the cervix to sustain the uterus after it is replaced. This form of utero-vaginal junction is important as giving ground for a very grave prognosis as to the cure of all anterior and posterior displacements.

Treatment.—The first indication is to restore the uterus to its place, the second to prevent its again becoming displaced.

Methods of Reduction.—In an ordinary case in which the uterus is not firmly held in retroversion by the surrounding parts, the patient should be placed on the left side as for an ordinary examination with Sims's speculum. The operator then lubricating the index and middle finger of the right hand introduces them, he standing at the patient's back, and

facing her head, and the palmar surfaces of the fingers being directed to the rectum. The body of the uterus is then lifted upon the tips of the fingers until it becomes erect, then their dorsal surfaces, which will really be the backs of the nails, are made to push the organ over into normal position. As the uterus becomes elevated the middle finger is still kept in the post-uterine space to maintain what is gained, while the index finger is carried in front of the cervix, and this part is by pressure forced back towards the sacrum. The middle finger is now likewise placed in front of the cervix, and by both fingers this part is forced towards the sacrum and kept there for a short time. This method of replacing a uterus which has fallen backwards is superior to any other that I know of. I would urge a trial of it exactly as here described, and will answer for its efficiency.

But sometimes the uterus is irreducible by any but the most powerful methods. In such a case, the bladder and rectum having been evacuated, and the clothing loosened, the patient is made to kneel upon a hard surface, and to place the sternum as closely as possible in contact with the plane which supports her. The practitioner then lubricating two fingers of the right hand carries them into the vagina and against the fundus. He then directs the patient to fill the chest with air, and expel it completely. As she does so, he forcibly elevates the fundus and restores it to its place. Should this plan fail, the buttocks should be still more elevated by placing cushions under the knees, and the attempt repeated with two fingers in the rectum instead of in the vagina.

Should these powerful and usually efficient methods fail, I would strongly urge against efforts being made by introduction into the uterus of instruments for restitution. If they exert less force, they will not be effectual; if more, they may penetrate the uterus and create peritonitis. Besides, in a case resisting the plan detailed, there will probably be found to be adhesions as the source of the difficulty. Under these circumstances, Kuchenmeister¹ has, from extended experience, advised the introduction of the colpeurynter filled with water every day, for as long a time as the patient can bear it. Steady hydrostatic pressure often in this way accomplishes safely what sudden force would do with danger to the patient.

In cases requiring the application of much less force, Sims's repositor is an excellent instrument for the purpose, and should be employed. This instrument, which is represented by Fig. 178, consists of a short metal sound, terminating in a ball. The ball is clasped by a straight shaft, moves upon a pivot running through its centre, and is perforated by seven holes. Through the shaft runs a rod which is projected by a concealed spring, that is governed by the finger passed through the ring. The ball can be made to revolve so that the sound describes a half circle,

¹ Am. Journ. Med. Sci., July, 1870, p. 275.

by withdrawing the stop-rod which runs through the shaft, and depressing the instrument.

FIG. 178.



Sims's uterine reposer.

In the majority of instances reposition is perfectly practicable by combined manipulation or rectal taxis, or by means of a sponge fixed in a sponge-holder and pressed into the fornix vaginae.

Good results will often attend carrying one sponge staff up the rectum and another up the vagina, so as to make pressure upon the displaced fundus, after the plan adopted by Dr. Bond, of Philadelphia, in his ingenious reposer, which is represented in Prof. Meigs's work on Midwifery. In replacing a uterus in this or any other malposition, the operator should never forget that inflammatory action may have caused an effusion of lymph around it which resists its removal, and that if these adhesions be violently ruptured cellulitis or peritonitis may result.

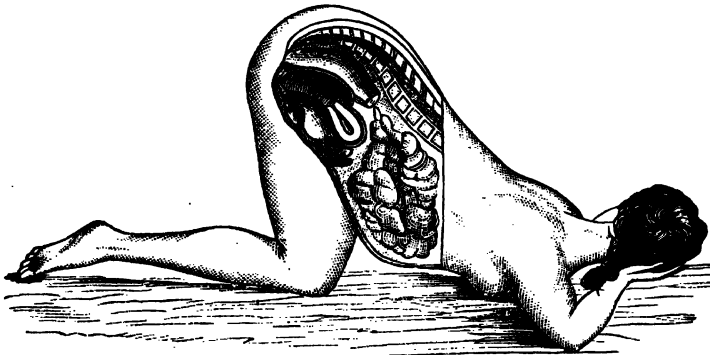
As early as 1820, von Ritgen, of Giessen, recommended the knee-chest position for the automatic replacement of the retroflexed womb, and since his time the method has been often resorted to as an adjuvant to replacement. To Dr. H. F. Campbell, however, belongs the credit of systematizing it as a method of "pneumatic self-replacement," and putting it at the disposal of the gynecologist for daily use. "Campbell's method" never does harm, generally effects great good as an adjuvant to other treatment, and in rare cases proves in itself sufficient for complete relief. It consists simply in the reversal of gravity by placing the patient in the attitude represented in Figs. 179 and 180, an examination of which will at once show the action of the method upon intestines and uterus. Dr. Campbell likewise directs that a small glass tube, about as large as the largest sized test-tube, should be introduced into the vagina by the patient while in the "genu-pectoral" position, to secure the admission of air and its action as a reposer.

During the treatment of all uterine displacements, except inversion and irreducible flexion, the patient may, with advantage, be directed to practise this automatic method of replacement for five or ten minutes upon retiring at night and upon rising in the morning. If a pessary be worn, it will be, by this plan, relieved of much of the pressure which it bears, congestion of the pelvic viscera will be lessened, and the organs of the abdomen, being displaced upwards, will not immediately descend and depress those of the pelvis.

FIG. 179.



FIG. 180.



The genu-pectoral position ; showing its action in retroversion.

After replacement has been effected by any one of these methods, the sound may be employed to make sure of its thoroughness and to increase it. It should never be used for this purpose before manual replacement, and even after it it should be employed very cautiously and by the following steps :—

1st. It should be introduced, but slightly bent, to the fundus.

2d. Holding the handle in his left hand, the operator should place the tips of the fingers of the right hand upon the shaft and carry it towards the perineum as far as possible.

3d. The uterus being now, to a certain degree, straightened and elevated, the sound should be rotated so as to throw the fundus forwards, and the handle of the instrument held in one hand be carried towards the patient's back so as to advance the tip as far as possible towards the abdominal walls.

Reading a procedure thus described often leaves the impression that it is a complicated one, and, perhaps, that the directions given are unimpor-

tant. Let one who has habitually used the sound simply as a rotator fairly try this more delicate and rational employment of it, and I am sure that he will adhere to it, even although prejudiced against it originally.

Sims's repositor, likewise, answers a good purpose in rendering replacement complete after partial replacement by the fingers.

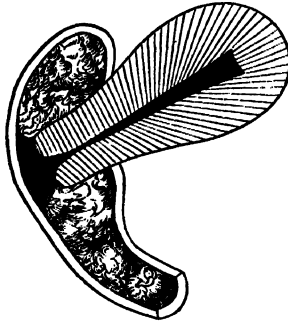
Means for Retaining the Uterus in Position.—Having replaced the uterus, the question which arises is, How are we to prevent the recurrence of displacement at a very early period? Careful attention should immediately be paid to the following points: 1, all pressure from above should be removed by the use of the skirt supporter, the abdominal supporter, and avoidance of injurious muscular efforts; 2, increased weight of the uterus should be diminished by the adoption of means already pointed out for the fulfilment of this indication; 3, feebleness of the uterine supports should be remedied by exercises calculated to develop the retentive powers of the abdomen and by general and local tonics; and 4, all traction upon the uterus should be removed by perineorrhaphy, or this combined with colporrhaphy. The fulfilment of one or of all these indications may at once bring relief to a case in which less radical and more desultory efforts might be indefinitely prolonged with only partial benefit. As the means for fulfilling these indications have been already fully pointed out, I shall not repeat them here.

All causes which originally excited and still perpetuate the accident having been as far as possible combated, the chief and most immediate indications are clearly to replace the displaced uterine body and to keep it in position.

For the purpose of fully exhibiting the method of treating a chronic case of this disorder, I will suppose that we are dealing with one of rebellious character, in which there is considerable tenderness about the uterus, so that it will not tolerate the pressure of a pessary sufficiently powerful to keep it in position. The bowels should be evacuated; the vagina thoroughly syringed with warm water night and morning; all weight taken from the abdomen by a skirt supporter, an abdominal supporter, and avoidance of all muscular efforts; and the uterus be replaced and held in the condition of complete anteversion for two or three minutes, once in every forty-eight hours, for a week or more. As an additional preparation for the permanent support of the displaced organ, a tampon of carbolized cotton should be applied in the following way: the uterus being pushed into a state of complete anteversion, a roll of cotton about the size of a small hen's egg, or an egg-sponge moistened with carbolized glycerine, should be carefully pushed as far as it will go into the fornix vaginæ. Then a large roll of cotton should be placed below the cervix and a little anterior to it (not behind it, as the first one was), but so arranged as to lift this part up into the hollow of the sacrum against the roll, which has now become invisible, in the fornix vaginæ. The subcervical tampon not only pushes back the cervix,

which was before its introduction near the symphysis pubis, but it still further elevates the supra-cervical roll, which thus pushes the fundus farther and farther upwards until it topples over forwards by its own weight, uninterfered with as it is by pressure from above, and aided by the abdominal decubitus which should be observed by the patient. The accompanying diagram will explain the action of these two portions of

FIG. 181.



the tampon *when properly applied*. If, instead of being thus applied, the ordinary tampon be employed, and the lower portion of the vagina be filled, nothing is accomplished but elevation of the retroverted organ. What we desire to produce is anteversion. After the introduction of the cervical pad as shown in the figure, the vagina is filled with cotton to keep this in place, as well as to elevate the whole uterus, and bring gravitation to our aid in throwing the body forwards. I do not look upon the abdominal decubitus as a valuable resource in the treatment of retroversion, but merely as an adjuvant to other means, which directly straighten the axis of the uterus. Lift the retroverted organ, and it has a certain degree of efficacy, as an adjuvant, which it does not possess while the displacement is in existence. The tampon may be retained for forty-eight hours without inconvenience, if the material of which it is composed be properly prepared by means of antiseptic drugs.

Cotton impregnated with antiseptic and alterative substances, such as borax, carbolic and salicylic acids, zinc, copper, alum, iron, etc., may now readily be obtained from druggists, so that the physician need not charge himself with its preparation.

During the use of this means the patient may go about and attend to her usual avocations, although sometimes it is better to confine her to bed.

I sometimes effect the same result by introducing a Hoffman's or Hurd's inflated rubber pessary, and then placing under this a tampon, which will press it firmly up against the displaced fundus.

Should the residence of the patient be out of the city, or her pecuniary

condition render it impossible for her to be treated as here advised, the

FIG. 182.



Hoffman's inflated, soft-rubber
pessary.

plan may be imitated by one which is very effectual, and much less troublesome to patient and physician. The uterus being thrown into anteversion by the repositor, or two fingers introduced into the fornix, while the patient is in the left lateral position, a sponge-pessary, which consists in the attachment of a soft egg-sponge, instead of a bulb, to the stem of Cutter's pessary, Fig. 191, should be left in position. The sponge fits in the vaginal cul-de-sac, is steadily

pushed upwards against the uterus by the elastic dorsal strap, and forcibly, but gently, keeps the organ in normal position. For such cases as those just indicated, and for others in which the retroversion is so obstinate that it recurs in spite of a pessary passed entirely into the vagina, this constitutes a means of such great value that I urge its trial in all difficult cases. By it I have controlled many cases which had resisted all other plans of mechanical treatment, and feel assured that it will not fail to produce in the hands of others as good results as it has yielded me. Of course, it is only a temporary and preparatory means, for sponge is, at all times, an objectionable substance to leave in the vagina. It should, in this case, be removed, washed, and replaced by the patient once in every twelve hours.

After the methods thus far described have been pursued for a month or two, even the worst cases will generally tolerate a well-adjusted permanent pessary; but where this tolerance is not established, the medicated tampon, or sponge pessary should be continued until it becomes so.

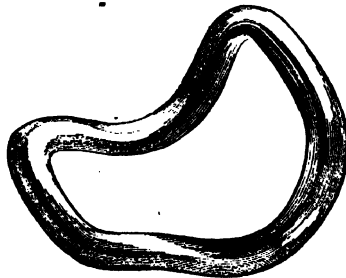
One important point in connection with this method of replacing the uterus is this. The round ligaments are attached to the horns of the organ, and at the vulva. If the retroverted or retroflexed uterus be left in malposition and simply pushed up, the ligaments will inevitably increase and insure the continuance of the displacement. If, on the other hand, the body be thrown forwards and kept in anterior position until the organ be lifted, the round ligaments, becoming tense, tend to act remedially on posterior deviations. A little thought will convince the reader of the truth of this statement. It is upon this action of the round ligaments that I in part depend for the benefit of the plan which I am describing.

It may be asked whether I propose to treat all cases of retroversion in this manner in the beginning. By no means so. I prefaced these remarks upon preparatory treatment by stating that I supposed the practitioner to be dealing with an aggravated case and one intolerant of support. Most cases will at once admit of the use of a retroversion pessary, and require no preparatory treatment. There are, however, many others which do require it and in which immediate resort to artificial support proves inju-

dicious and even dangerous. Some may suppose that a great deal of time must be consumed by this preparatory treatment which is not absolutely necessary for the relief of the case. If preparatory treatment be not necessary, it should not be resorted to; if it be necessary, time will be gained and not lost by its adoption. At least let me urge this advice: when the most carefully adjusted pessaries create discomfort, let a month be devoted to the preparatory treatment which I have described, and at its end let pessaries be again tried. Many cases will then be found to yield to mechanical treatment which were rebellious to it before, and more certainly so if the means recommended for removing pressure upon the fundus from above be faithfully put in practice. Some of the most gratifying results of gynecology will be found to arise from a cautious, patient, and philosophical treatment of these cases. But let no one suppose that a careless fulfilment of the directions given is likely to perform all this. If the plan which I am urging be used unintelligently and roughly, it will do harm and not good, and result in annoyance and not comfort to the patient.

It has now been decided, we will suppose, to try the effects of a retroversion pessary. Which of the many varieties at our command shall be selected? The oldest and most generally known of these instruments, Hodge's pessary, still holds its place in professional esteem, and is shown in Fig. 183.

FIG. 183.



Hodge's closed lever pessary.

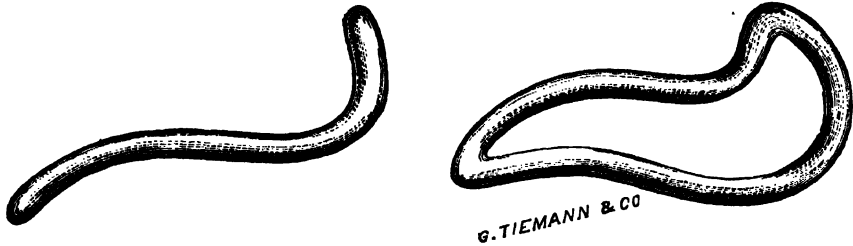
To Hodge's pessary there are two objections: one is that it lacks a point of resistance at the outlet of the pelvis, which prevents it from turning around; the other is that it does not carry the body of the uterus high enough up in some cases. These defects Dr. Albert Smith has well met in the modification of Hodge's instrument which is shown in Fig. 184.

I likewise very commonly employ, in cases in which I desire to carry the retroflexed fundus very high in the pelvis, the instrument shown in Fig. 185.

It is a long and narrow instrument, surmounted at its upper extremity by a bulb, and measures between its branches at the widest part seven-eighths of an inch in the smallest sizes, and one and one-eighth of an inch

in the largest; upon its upper extremity is a bulb which prevents cutting of the tissues; its lower extremity rests against the tissues under the pubes; and it is five inches long in the largest sizes, and four and a quar-

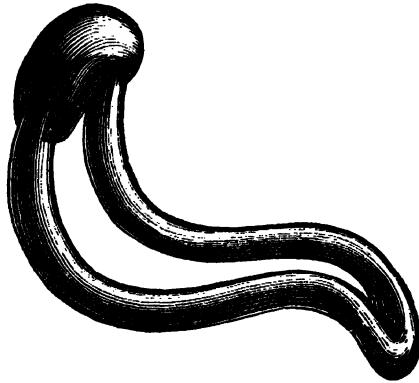
FIG. 184.



Albert Smith's pessary.

ter in the smallest, measured along the outside curve of the branches. Spanning the pelvis, this narrow instrument stretches the vagina without distending it, and pushes the fundus to a higher point than any other with which I am familiar. Its retention depends not upon its size but its relation to the pelvis, for it is prevented from escaping not by separation of its branches, but by the length and degree of the post-uterine curve, and by the retention established by the tissues under the pubes against the downward curved lower extremity.

FIG. 185.



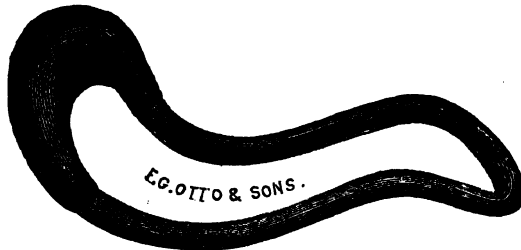
Thomas's retroflexion pessary.

The same instrument is also very cleverly made by Mr. Otto, of this city, of elastic spiral wire, covered with soft rubber, and ending in a soft rubber cushion or bulb at its upper extremity, as shown in Fig. 186.

To a limited degree support may in these cases be obtained by the elastic ring pessary of Meigs, which has been as variously altered as the lever of Hodge, but this instrument in posterior and anterior displacements is only palliative and imperfect in mechanism.

Nevertheless this instrument, imperfect as it is, cannot be discarded by the gynecologist, for in some cases it answers a purpose which no other

FIG. 186.



Elastic bulb pessary.

instrument can be made to do. To one unaccustomed to the use of pessaries the simplicity and elasticity of this instrument will prove very seductive, and lead to a belief in its perfect harmlessness. Such a reliance will prove utterly delusive. Even the most elastic instrument will often cut through the vaginal walls when it is a little too large. It is indeed more liable to produce this result than any other variety of pessary.

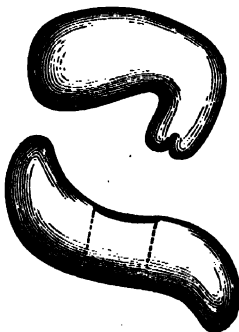
Sometimes the posterior uterine wall becomes the site of a fibrous tumor, which, by keeping up congestion by its presence as well as by the flexion which it induces or aggravates, renders the whole fundus so tender, that

FIG. 187.



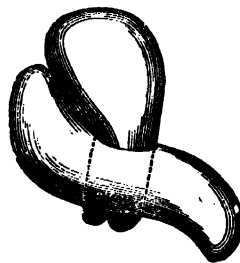
Meigs's elastic ring pessary.

FIG. 188.



Hurd's pessary.

FIG. 189.



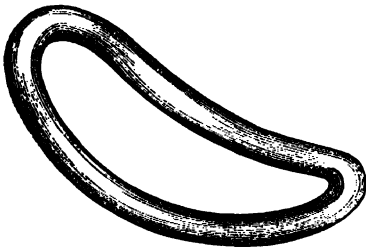
Retroflexed uterus in Hurd's pessary.

an ordinary pessary cannot be tolerated. In such cases the bulb should be removed from the modified Cutter's pessary and replaced by a soft sponge,

and by this the uterus may be supported. Under these circumstances Hurd's pessary, Fig. 188, will be found to answer a good purpose, and the inflated, soft rubber pessary of Hoffman, Fig. 182, is also a serviceable temporary resort, alone or combined with the tampon, which greatly increases their efficiency. Where tenderness is excessive, it will often be found to be a wiser course to pack the fornix with medicated cotton or sponge, and elevate the whole uterus, as already advised. By employing this method for a time, a pessary will soon be tolerated.

These are the instruments which I employ in ordinary cases of posterior displacement of the uterus. There are other varieties, however, which often answer an excellent purpose.

FIG. 190.



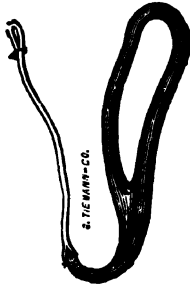
Hewitt's pessary.

Hewitt's pessary is an excellent one, if the weight to be sustained be slight. If it be at all great, this instrument is utterly inadequate to cope with it. It is not simply inefficient; it is in such cases a dangerous instrument, for resting against the soft parts covering the symphysis pubis it may, as I have seen it do, cut directly through.

In a certain number of cases the displaced uterine body is so heavy and presses so forcibly downwards that a pessary of ordinary size is driven out of the vagina, or so low down as to allow descent of the fundus. This might be obviated by employing an instrument of large size and great expansion of limbs, but this the vagina cannot tolerate. It sets up ulceration and creates pain from pressure and distension. In other words; without a very firm base the uterus forces out the instrument; with a sufficiently firm base to resist this, ulceration from excessive pressure results. In some cases indeed, so very great is the pressure exerted by the displaced uterus, that no purely internal support will answer the purpose of sustaining it, for the point against which either the pubic or uterine extremity of the instrument rests will, in spite of every precaution, become ulcerated. Under these circumstances I have obtained the most gratifying results from the use of a modification of Cutter's retroversion pessary, intended to obviate a difficulty which I found attended that excellent instrument, that of cutting through the vagina. If no great amount of pressure is to be borne, Cutter's pessary answers very well for this purpose; if great pressure is to be borne, the point of his instrument endangers the tissues. For this reason I have affixed to the top of Cutter's pessary bulbs of different sizes—some as large as a hickory nut—for the object is not only to prevent cutting of the vagina, but to place behind the displaced fundus a mass which will make it fall forwards by *displacement*, and not by pressure. My alteration of this in-

strument is insignificant ; the entire credit of it belongs to Dr. Cutter, to whom the profession is indebted for affording it so valuable and simple a method for meeting the difficulties of aggravated retroversion. Had I space, I could cite a number of very bad cases of this difficulty, which

FIG. 191.



Cutter's pessary.

FIG. 192.



Thomas's modification of Cutter's pessary.

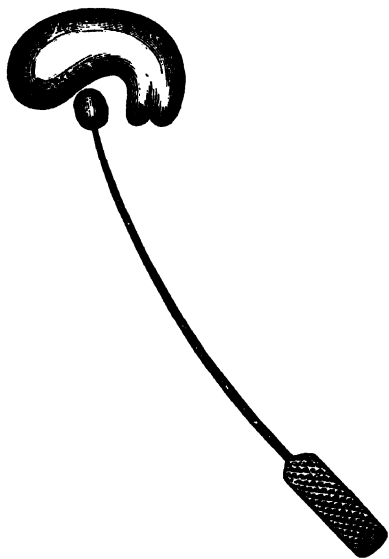
had for years resisted treatment by ordinary pessaries, and which have readily yielded to the use of Cutter's instrument, or this modification of it. The inferior extremity of this pessary arches backwards over the coccyx, and attaches to an elastic cord which passes upwards over the sacrum to a girdle around the waist. It is a painless and efficient method of giving support, and will gain a high reputation on account of these qualities in posterior displacements. The class of cases to which it is especially applicable, is that in which the displacement is due to prolapse of the posterior vaginal wall from rupture of the perineum or other cause. When employed for posterior displacements, the upper extremity of the instrument simply lies in the fornix vaginae, the cervix of course not entering the fenestra.

This instrument should be removed every night and reinserted every morning. It may be said that this will prove difficult of accomplishment for the patient. Out of several hundred cases in which I have used it, I have never found an instance of failure in this respect. The patient will very often become disaffected towards the instrument from its chafing the perineum. By a little patience, covering the points which rub with greased lint, and leaving the pessary out until the irritated part be healed, the feeling will soon pass away.

It will be observed, that thus far we have dealt, in treating of the mechanical means for sustaining the flexed uterine body, with those which directly push the fundus upwards, in the hope that in time it will fall forwards of its own weight and assume a natural position. In some cases this is not enough ; we are forced to do that at the same time that we elevate as far as possible the cervix into the hollow of the sacrum, and thus increase the liability of the uterine body to fall forwards. In other words,

there are two forces which may, through a pessary, overcome retroflexion: first, that which pushes the corpus uteri upwards and forwards; second,

FIG. 193.



Force applied to uterine body alone.

that which pushes the cervix upwards and backwards. The first of these often proves quite sufficient without the second, but sometimes the direct and steady pressure upon the uterine body involved in it becomes intolerable. Then is it that the second, which alone is never sufficient, comes into play as an efficient adjuvant. I have often seen the practice of the double method effect cures which seemed to have been impossible by that of a single one. I deem this point of sufficient importance to illustrate it by schematic diagrams.

This double action is developed by the post-cervical and ante-cervical tampon, by the sponge and tampon, and by Hurd's pessary and a tam-

FIG. 194.

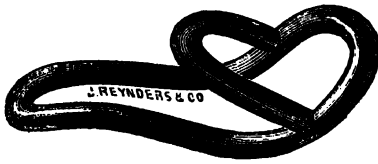


Force simultaneously applied to cervix and body.

pon. I now show two pessaries which accomplish the same end, one an addition to the Hodge pessary, the other a modification of the Cutter.

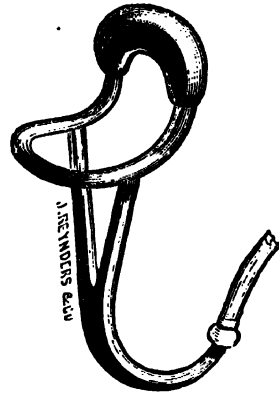
The second is so uncouth in appearance that one instinctively feels prejudiced against it, but I would ask for it a fair trial, and assure my readers that it has proved, in my hands, a most valuable resource in a class of cases of most intractable character.

FIG. 195.



Retroflexion pessary with cervical rest.

FIG. 196.



Modification of Cutter's pessary with cervical rest.

It will be at once appreciated that the anterior arm in each of these instruments lifts the cervix upwards, as the anterior ball does in Fig. 194.

By these means a uterus affected by a reducible retroflexion may, in all conditions excepting the unfavorable ones already mentioned, be restored to its place and kept there without resort to the intra-uterine stem or a cutting operation. These unfavorable conditions we will now consider.

When the vagina unites itself to the cervix so near its lowest point as to leave almost no post-cervical space, it is impossible to sustain the uterus by any vaginal pessary. Under these circumstances, and these alone, I believe the intra-uterine stem to be necessary in posterior displacement. Those which were recommended in antelexion will answer here.

Antelexion is probably often a congenital condition, or continues for so long a period during the life of the girl before it is discovered, that the anterior inflexion becomes an irreducible uterine deformity. This is sometimes, though much less frequently, so in retroflexion, which is usually reducible, unless the flexed body be bound down by false membranes, the result of slight peritonitis. It is sometimes difficult in a given case to decide the cause of the permanency of the displacement. In a general way it may be said, that, if it be due to false membranous attachment, the uterus will not move from its position in the pelvis; if it be due to contraction in the tissue of the uterus itself, the organ will change its pelvic relations, but not the abnormal ones existing between body and neck.

In case the flexion be found due to parenchymatous alteration, no sur-

gical procedure should be adopted; but the body should be cautiously bent forwards once or twice a week by means of the sound or repository, and kept in anterior inclination by means of the retroflexion pessary shown in Fig. 195, or by the modified Cutter's pessary.

If the uterus be found fixed in the position of retroflexion by false membranous attachments not of recent origin, and the patient be not suffering to such an extent from the displacement as to render reposition urgently necessary, it had better be left undisturbed in its unnatural place. Should the disorder, however, be affecting the health, or causing such pain and discomfort as to render the incurring of the risk of peritonitis warrantable, reduction should be accomplished in this way. The patient having been anaesthetized and placed in the left lateral position, the sphincter ani should be stretched by the thumbs. Then the index and middle fingers of the right hand should be passed, with the palmar surfaces towards the sacrum, up the rectum to the flexed uterine body. Steady pressure should then be made upon it until the organ is lifted upright, when, the fingers being made to describe the arc of a circle towards the pubes, the outer surfaces of the finger-nails will be in contact with the uterine body, and by them it will be pushed over into an anterior position. After this the fornix should be filled with a soft, moist sponge, and this be forced up so as to sustain the body by a tampon of cotton in the vagina. After this the patient should be kept very quiet for a week, and all pain should be soothed by free use of opium, as a preventive of peritonitis.

Lateroflexion.

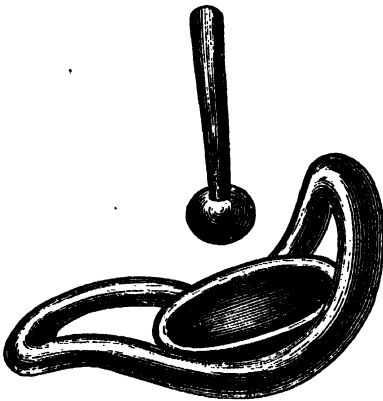
Sometimes the uterus is flexed to the right or left side as a consequence of disease of its proper tissue or of direct pressure. This variety of displacement rarely attains to such a degree,

however, as to result in obstruction of the uterine canal. Its chief importance is connected with diagnosis, for it may readily be mistaken for periuterine inflammation or a fibrous tumor. The practice of conjoined manipulation and the use of the uterine probe will always settle the point.

The treatment of lateroflexion should be conducted upon precisely the same principles which guide us in reference to antelexion and retroflexion. Of all varieties of flexion this is the most likely to require the use of the intra-

uterine stem, for it is exceedingly difficult, I may even say rarely possible, to overcome it by a vaginal instrument. When this necessity presents

FIG. 197.



itself, either in retroflexion or lateroflexion, I employ the intra-uterine stem represented in Fig. 197. The fundus is in part sustained by the pessary, not entirely by the stem.

After the introduction of every pessary, the position of the uterine body should be at once examined, either by the probe, by conjoined manipulation, or by both, to ascertain whether the instrument be efficient or not. If it be not so, it is imperfect, for the object is not to go through the form of introducing a pessary; it is to rectify the malposition of the uterus. At the next and at every subsequent visit of the patient, this examination should be made before removal of the instrument, in order to test the effect of time and movement upon the position of the supported uterus.

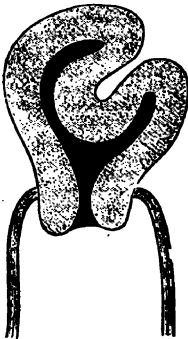
CHAPTER XXIX.

INVERSION OF THE UTERUS.

Definition.—This dangerous and infrequent form of displacement consists in the turning of the uterus inside out. As the bottom of a bag may be pushed through its mouth, so that the inner surface becomes the outer, so may that of the uterus, and the occurrence of such an accident constitutes the disease which we are considering.

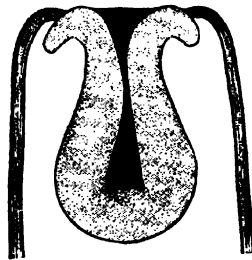
Varieties.—Writers differ in classifying the varieties of the affection, some describing three and some four forms. For practical purposes all

FIG. 198.



Partial inversion.

FIG. 199.



Complete inversion.

these may be brought under two heads—partial and complete. In the first the body has become depressed, but has not passed through the os. In the second the uterus has been turned completely inside out, and the inverted fundus and body hang in the vagina or between the thighs,

"*velut scrotum*," as it has been expressed by Hippocrates. Fig. 198 represents the first, and Fig. 199 the second form of the accident.

In addition to these varieties the accident must be divided into acute and chronic, or sudden and gradual inversion, as it occurs rapidly or slowly.

Anatomy.—In treating of flexions of the uterus, it was remarked that they are chiefly prevented by the resisting nature of the parenchyma of the cervix which supports the fundus and body. A similar function on the part of the entire uterine structure keeps the cavities of the neck and body closed, and prevents inversion. Should that power, which in the pregnant uterus we call contractility, and in the non-pregnant, tone, be to any great degree impaired, the body of the organ, bereft of support, will incline forwards or backwards. Should it be entirely abolished, the fundus under the influence of traction or downward pressure may pass through the unresisting os and escape into the vagina, constituting inversion. I once saw this perfectly illustrated in a cadaver upon which I was called to perform version soon after death. As I extracted the child the flaccid uterus followed it directly and was completely inverted, the placenta still adhering.

Pathology.—The accident depends for its production upon two elements—

- 1st. Relaxation and inertia of the uterine walls;
- 2d. Downward traction or pressure.

The first of these may be a primary and original state, or it may be induced by the second after months of exhausting action. For example, after labor the uterine walls may remain lax and atonic from inherent inertia; or their tissue in the non-pregnant state may be firm and resisting, yet in time be overcome by the traction and dilatation exerted by a large fibrous polypus attached to the fundus.

In the limited space which I can allot to this subject it is impossible to present the various theories which have been advanced for the explanation of the mechanism of inversion; nor would it be beneficial for the student that I should do so. In place of such an effort I shall mention those which appear to me to possess a really important and practical bearing upon the subject.

The three views to which I shall direct attention are the following:—

1st. That some part of the relaxed body prolapses, and passing out of the cervix drags the entire uterine body with it.

2d. That some part of the relaxed body prolapsing, acts as an excitant of uterine contraction which forces the remaining portion through the cervix, and thus inverts the whole organ.

3d. That lateral traction and direct pressure on a cervix the tissue of which is abnormally soft, causes eversion of this part and gradually of the whole uterus.

The first of these is the oldest and even at present the most generally received view as to the mechanism of inversion. According to it, it was generally supposed that the part of the fundus which first undergoes inversion is the middle. This is denied by Oldham and Kiwisch, who maintain that one horn first inverts itself and is followed by the fundus, the other horn, and then the entire body. I have met with one case which proves incontestably that, even if this be not a rule, inversion at least occurs in this manner sometimes. A patient who for several years had suffered from menorrhagia applied to Prof. C. A. Budd, of this city, for treatment. Upon examination he discovered what he supposed to be a fibrous polypus equal in size to a hen's egg attached to the uterine cavity near the entrance of the right Fallopian tube. Carefully differentiating this, as he supposed, from partial inversion, he applied the *écraseur* and removed it, when he discovered that he had removed one horn of the uterus with a part of the corresponding Fallopian tube and round ligament. The case, which was one of partial inversion, was not susceptible of diagnosis. The menorrhagia attending it was entirely relieved by the operation, the patient rapidly recovering.

When the accident begins in this way, the inverted horn pulls down the other parts, with greater or less rapidity, and thus the method of occurrence may be lost sight of. Rokitansky, in speaking of irregular post-partum uterine contraction, thus describes partial inversion, with which he has twice met: "We must here mention a very singular circumstance which may, on account of the consequent danger, become important, and may even be misunderstood in post-mortem examinations; it is paralysis of the placental portion of the uterus occurring at the same time that the surrounding parts go through the ordinary processes of reduction. It induces a very peculiar appearance. The part which gave attachment to the placenta is forced into the cavity of the uterus by the contraction of the surrounding tissue, so as to project in the shape of a conical tumor, and a slight indentation is noticed at the corresponding point of the external uterine surface. The close resemblance of the paralyzed segment of the uterus to a fibrous polypus may easily induce a mistake in the diagnosis, and nothing but a minute examination of the tissue can solve the question. The affection always causes hemorrhage, which lasts for several weeks after childbirth, and proves fatal by the consequent exhaustion."

Since the days of Astruc, the theory has been at various times maintained that active contraction of the uterus sometimes produces inversion. "Sometimes," says Astruc, "it is produced from contraction of the womb, which forces the bottom inside out, through the mouth of the womb, which is not yet closed." Regular uterine contraction, however violent it may be, would only tend to complete closure of the uterine cavity. If, however, such a partial inversion or internal projection as that alluded to by Rokitansky, in the quotation recently made, occur, it acts as the placenta,

the hand of the obstetrician, or any other body in the cavity, by exciting expulsive efforts which may succeed in driving it out of the os externum. Should they do so, complete inversion is the result; should they fail, the projection may persist as a partial inversion. This view, which was advocated by the late Dr. Tyler Smith, appears to me to explain the apparent paradox of inversion with tonic contractions of the uterus more satisfactorily than any other which has been advanced. I have met with one case occurring after delivery, which convinces me, that sometimes, at least, what I have just described really takes place.

Still another and very ingenious theory has been advanced by Prof. I. E. Taylor for explaining the occurrence of inversion. It is that inversion sometimes begins at the cervix, this part undergoing eversion as in prolapsus, and this going on to the complete inversion of the entire organ.

In previous literature, allusions to the possibility of inversion after this method may be found. Klob alludes to it in these words: "A very remarkable class of cases of inversion are those in which, without efficient cause, an inversion of the cervix into the vagina takes place, drawing the fornix of the latter with it, and thus forming a polypus-like tumor in the cavity of the vagina, which may reach down to the vulva, at the lower part of which the internal orifice is situated." A very striking case was published by Mr. William Lawrence in the London Medical Gazette, Dec. 5, 1838, under the head of "Spontaneous Partial Inversion of the Uterus." But the credit of having drawn proper attention to the subject and having proclaimed its probable pathological bearings, unquestionably belongs to Taylor. I say "probable," for the reason that it is not yet proved. I accept it, because my own observation leads me to believe that Dr. Taylor's deductions are probably correct.

Predisposing Causes.—Every influence which destroys the tone and resistance of the uterine parenchyma proves a predisposing cause of this condition. As examples, may be mentioned—

- Parturition;
- Distention of uterus by retained fluids;
- Distention of uterus by tumors;
- Spongy softening of tissue in prolapsus(?).

Exciting Causes.—A uterus in which the tone of the walls has been destroyed by physiological, pathological, or mechanical causes has lost all its normal safeguards against inversion. Thus, we may say, that anything which produces distention and relaxation of the tissue of the uterus prepares the way for inversion so completely that a very trifling exciting cause may produce it. For example, any decided traction or pressure exerted upon the fundus of a uterus thus affected, even to a limited degree, may directly result in it. The exciting causes are thus presented:—

Traction on placenta ;
 Traction by polypi or tumors ;
 Sudden delivery of child by traction ;
 Muscular efforts when relaxation exists ;
 Prolapsus uteri (?).

Instances of its production by all these causes are on record, though by far the greatest number of cases has followed parturition. Of 400 cases collected by Dr. Crosse, of Norwich, England, 350 followed delivery, and of the remaining 50, forty were due to polypi. This disproportionate frequency does not, however, invalidate the fact that the other causes mentioned have resulted and may result in the accident. Most frequently it occurs very soon after delivery, though Ané and Baudelocque report its having taken place on the third, and Leblanc on the tenth day.

Traction and relaxation, when combined, are evidently sufficient for the induction of the accident, and it is generally to a union of the two that it is due. The question now arises whether either of them alone can cause it. With reference to the efficiency of the second element, the answer may be affirmative, since, with complete relaxation, inversion may occur from a very insignificant exciting cause, as coughing, sneezing, or a change of posture. As to the possibility of any amount of force inverting the non-pregnant and undilated uterus, much doubt has been expressed. At first thought, every one will feel inclined to express a decidedly negative opinion, but the evidence on record in favor of such a possibility is too strong to be entirely ignored. A portion of it is therefore laid before the reader.

Puzos,¹ in 1744, read before the Academy of Medicine of Paris a memoir in which he declared that he had seen the accident in women who had never borne children. Boyer² cites a similar example in a female whose uterus contained no foreign body, and Daillez³ tells us that Baudelocque met with a case in a girl fifteen years of age, in whom clandestine delivery could not have occurred, since a perfect hymen existed.

Prof. Willard Parker, of New York, furnishes me with the history of the following case. A young woman who had borne one child, seven or eight years previously, and had never had any recognized uterine disease, while making a violent effort in rolling tenpins, suddenly felt something give way within her, after which she suffered the most intense pain and became completely disabled. Dr. Parker being called to see her, after a hasty examination coincided with the opinion of the attending physician, that a polypus had been suddenly expelled and was hanging in the vagina. Impressed with this belief he removed the whole mass, when, to his surprise, he found that he held in his hands the inverted uterus with its tubes

¹ Colombat on Females. Meigs, p. 182.

² *Traité des Mal. Chirurgicales.*

³ Colombat, *op.cit.*

and ligaments. The patient recovered without any bad symptoms, and subsequently menstruated regularly.

Menstruation, after amputation of the uterus, is by no means rare. It must be remembered that in such an operation the whole uterus is not removed. It is from the remaining stump that the flow occurs.

It is certainly difficult to admit the occurrence of inversion beginning in the body of an undilated uterus. It may be that in these cases some distending influence which escaped observation preceded the accident. The suggestion of Colombat is certainly very plausible, that hydrometra, physometra, or retention of the menses must, in such cases, have produced dilatation, which, being followed by pressure just after the escape of the contained air or fluid, gave rise to the displacement. It may be that inversion begins in such cases at the cervix and becomes complete in the method suggested by Taylor.

After all, there is nothing more astounding in the fact of spontaneous inversion of an undistended uterus than there is in the spontaneous reposition of one which has been long inverted, and this we have, with the positive testimony of scientific and reliable men now on record, no possible justification for doubting. Of late the validity of both these phenomena has been denied. There is nothing easier than the rejection of the testimony of others, and the discrediting of deductions which we ourselves have not drawn. When De La Barre presented his case of spontaneous reposition to the Academy of Surgery, Baudelocque was appointed a committee to examine into it, and reported that it was "totally false." Some years afterwards he met with a very similar case, and yielded to the evidence of his own senses a credence which he had presumptuously denied to the assertions of another.

Symptoms.—Should inversion occur suddenly, as for instance after delivery, the patient will complain of discomfort about the vulva, faintness and nervous disturbance. Hemorrhage and tendency to collapse will show themselves, and unless proper treatment be adopted at an early period, death may ensue. A physical examination will at once settle the diagnosis, for a large, flabby, globular mass, perhaps with the placenta attached to it, will be found between the thighs of the patient if inversion be complete. But very often no diagnosis will have been made at the time of its occurrence, and months, perhaps years, afterwards, the physician will be called upon to determine the character of the case, which will probably present the following symptoms:—

- Occasional or constant hemorrhage ;
- Dragging pains in back and loins ;
- Difficulty in locomotion ;
- Difficulty in defecation and micturition ;
- Anæmia and its accompanying evils.

Physical Signs.—All these symptoms belong as much to polypus, fibrous tumor, and cancer, as to inversion, and to determine their true cause, physical exploration is indispensable. Should the inversion be complete, the finger being introduced into the vagina will meet with a tumor which the examiner will at once know is either the displaced body of the uterus or a polypus, and his attention will be directed to their differentiation.

IF IT BE A POLYPUS.

The probe will usually pass by its side into the uterus;

Conjoined manipulation will reveal the uterine body.

Rectal examination will reveal the uterus *in situ*;

Recto-vesical exploration will reveal the uterus;

Acupuncture will give no pain.¹

IF IT BE INVERSION.

The probe will be arrested at the neck;

Conjoined manipulation will reveal a ring where the uterus should be;

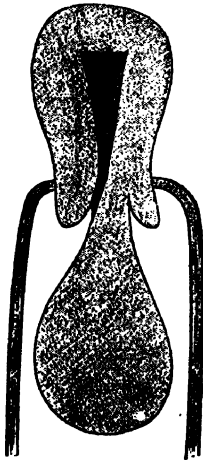
Rectal examination will not reveal the uterus *in situ*;

Recto-vesical exploration will not reveal the uterus;

Acupuncture will give pain.

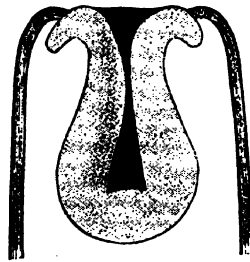
In certain very rare cases, a large fibrous tumor growing from one lip of the cervix, will lead to the belief in inversion in the following manner: the pedicle setting up inflammation in the cervical canal, complete adhesion takes place, so that a probe can nowhere be passed. An examination

FIG. 200.



Polypus.

FIG. 201.



Inversion.

of Fig. 200 will readily explain how such a state of things might arise and prove exceedingly perplexing. I have seen two such cases, one with Dr. Byrne, of Brooklyn, and another with Dr. Ross at my clinique, in both of which recognition of the presence of the uterine body above, emboldened

¹ Gueniot, Arch. Gén. de Méd., 1868, t. ii. p. 393.

me to work the probe through the tissue around the pedicle of the growth, causing it to enter the uterus, and thus prove incontestably the nature of the case.

Should the inversion be incomplete, diagnosis will always prove difficult, and in fat women particularly so. Differentiation from a fibrous tumor will depend upon the following signs :—

IF IT BE A FIBROID GROWTH.

The probe will show increase of uterine cavity ;

Conjoined manipulation and Simon's method will reveal rotund body of uterus ;

It will have come on very gradually ;

It will have no reference to parturition ;

Acupuncture is painless.

IF IT BE PARTIAL INVERSION.

The probe will show diminution of uterine cavity ;

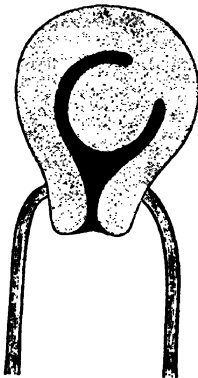
Conjoined manipulation and Simon's method will reveal small abdominal ring ;

It will have occurred more suddenly ;

It usually follows parturition ;

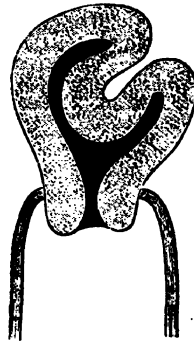
Acupuncture gives pain.

FIG. 202.



Fibrous polypus.

FIG. 203.



Partial inversion.

Course, Duration, and Termination.—All these are very variable. The accident occurring after delivery may rapidly, unless relieved, produce death by hemorrhage and exhaustion ; or it may continue for many years, giving very little annoyance ; or, again, it may render the life of the patient miserable on account of hemorrhage and other attending symptoms, and nevertheless last for years. As a rule, it may be stated that inversion continues until relieved by treatment, and yet even this is not without exceptions. The womb has been known under these circumstances to replace itself by its own contractions, years after its occurrence, when the accident has happened after delivery. Twelve such cases have now been placed upon record : three by Meigs,¹ and one by each of the following observers : Spiegelberg,² Leroux,² De la Barre,² Thatcher,² Rendu,² Shaw,²

¹ Obstetrics.

² Article by Prof. Spiegelberg, "Archiv für Gynäkologie," Am. Journ. Obstet., Aug. 1873.

Beaudelocque,¹ Foujen,² and Huckins.³ Even admitting the undoubted authenticity of these cases, spontaneous reduction must be regarded only as a curiosity, and not as a process to be anticipated.

Prognosis.—The prognosis of chronic inversion is at all times grave. Repeated and prolonged hemorrhages prostrate the patient, and expose her to all the risks of the worst forms of uterine polypus. But not only is she exposed to dangers inherent to the displacement from which she suffers; those attendant upon an erroneous diagnosis are very great. To one alive to the possibility of confounding the condition with fibrous polypus, the methods of differentiation are numerous and reliable; but to the rapid and careless diagnostician, who does not allow the possibility of error to enter his mind, and consequently does not carefully weigh the evidence, there is a great likelihood of it.

One who is aware of the great frequency with which amputation of the inverted uterus has been practised, under the impression that a fibrous polypus was being removed, cannot but wonder that errors of diagnosis have so often occurred, when so many methods of differentiation were at command. The explanation is that to which I have referred, namely, that the possibility of error was not entertained. Out of fifty-eight cases of inversion of which a report is given in the "*Beiträge zur Geburtskunde und Gynäkologie*," and in which amputation was practised, seven were mistaken for polypi.

I have treated personally nine cases of inversion, of which six resulted from parturition and three from traction by sessile polypi. Of these, seven were cured by replacement; one, in the case of a very old and feeble woman, was left unreplaced, after removal of a sessile fibroid, which gave complete relief; and one case after replacement ended fatally from peritonitis.

Even where a correct diagnosis has been made, still another danger menaces the patient: that of rupture of the vagina in attempts at reduction of the inverted organ. A small hand, a cautious, unexcitable mind, and constant vigilance during all the efforts by taxis, must be combined with thorough knowledge of the subject, to avoid this imminent danger. Even with this combination, it is a matter of surprise to me, from my experience with these cases, that the accident has not occurred much oftener. I confess that I should prefer to trust a patient in whom I felt great interest to the operation of abdominal section, which is hereafter described, than to that of prolonged taxis at the hands of a rough, unintelligent, and inexperienced practitioner. To one thinking upon this subject for the first time, this position will appear exaggerated and indefensible; but I assume it after mature reflection.

¹ Daillez, Thesis.

² Weiss, *Des Réductions de l'Inversion*, etc.

³ Letter to author from Dr. Jason Huckins, of Maine, U. S.

When the prospect of returning the uterus seems brightest, the practitioner is sometimes disappointed by the existence of adhesions. Thus Velpeau,¹ after the removal of a polypus attached to an inverted uterus, was completely foiled in restoring it, and the patient died from peritonitis.

Treatment.—In the treatment of inversion, three methods may be adopted.

1st. The organ may be left in malposition; hemorrhage being controlled by hemostatic means.

2d. The inversion may be reduced by taxis, by elastic vaginal pressure, or by a combination of the two.

3d. All these failing to give relief, the uterus may be amputated.

Methods of Checking Hemorrhage, the Uterus being left in situ.—Should the operator fail in repeated attempts at reduction, it becomes a question whether he should amputate the displaced organ or leave it in its abnormal position and endeavor to combat the evils resulting. The greatest of these is unquestionably hemorrhage, which steadily exhausts the patient; but others of less moment arise from dragging of the uterus upon its ligaments and the mechanical inconvenience of a tumor in the vagina. If the patient be near the menopause, both of these may diminish by atrophy and cessation of menstruation. Should she be young, artificial means may, in a limited degree, accomplish the same results.

The most vascular growths, such, for example, as hemorrhoids and nævi, may be diminished in size and rendered non-hemorrhagic by astringents or caustics, which destroy their superficial varicose vessels and leave a less vascular tissue beneath. The inverted uterus may be similarly acted upon, not only in checking hemorrhage, but in producing atrophy, and thus removing, to a certain extent, the two sources of suffering.

Solutions of alum, tannin, persulphate of iron, or acetate of lead may with advantage be injected into the vagina so as to bathe the uterus freely, or they may be placed in contact with it by means of pledgets of cotton. Should these fail in checking the flow, a plan, proposed by Aran, of applying caustics to the whole bleeding surface, may be resorted to. The tumor being drawn down and exposed to view as much as possible, its surface is seared by the actual cautery or touched by potassa cum calce or the mineral acids. The organ, after being bathed in a neutralizing fluid, is then enveloped in lint, so as to protect the vaginal walls, and placed within the pelvis. I have never seen the method employed, but would not hesitate in an appropriate case to venture upon it. Aran declares that not only is hemorrhage checked by it but great diminution of the tumor effected. The procedure recommends itself as eminently rational, and when it is remembered that the only recognized alternative is amputation, the propriety of giving it consideration must be admitted.

¹ Becquerel, op. cit., p. 306.

Many cases are on record in which the uterine mucous membrane has become altered so as to resemble skin, and in which the patients have lived without suffering for many years. Dr. Alexander H. Stevens had one case under observation for more than thirty years. Dr. Charles A. Lee diagnosticated one which had remained undetected for twenty-five years; and the works of older writers offer many other examples. If we can bring about a similar condition by artificial means and avoid the operation of ablation, we will certainly be acting in the best interests of the patient. It is for this purpose that cauterization offers itself as a resource.

Methods of Replacing the Uterus.—It is not certainly known whether the condition of inversion of the uterus was properly understood before the time of Ambrose Paré. Since his epoch it has been fully described by his successors, and all its pathological features, its various symptoms, and its manifold dangers, have been thoroughly appreciated. From the time of Paré, who lived about the middle of the seventeenth century, to our own, although great advances were made in the scientific department of the subject, very little was attained in the way of treatment. The possibility of replacing by taxis a uterus recently inverted was known, but for cases in which the organ had been displaced for years, or even for months, no resource existed except amputation.

It is certainly one of the many triumphs of which the gynecology of the nineteenth century can boast, that this accident has been proved to be amenable to conservative measures, and that taxis has been shown to be capable of effecting a cure, and preventing a resort to a mutilating surgical procedure.

So far as I have been able to ascertain, the first cases of chronic inversion which were successfully reduced by taxis are those mentioned by Colombat¹ in the following passage: "Dr. Daillez² reports in his dissertation that the surgeon, Labarre De Benzeville, had effected the reduction as late as the eighth month, and Baudelocque after eight years." In later times the first successful case occurred in 1847.³ The inversion had lasted more than a year, when M. Valentin, by introducing one hand into the vagina, and making counter-pressure by the other over the abdomen, succeeded in reducing the displaced fundus in ten minutes. In 1852, Mr. Canney⁴ in the same manner effected reduction in a case of five months' standing, and in the same year M. Barrier⁴ accomplished it in one which had existed for fifteen months.

Up to the year 1858, the reposition of inverted uterus may be said to have been limited to replacement, within short periods after parturition. It is true that occasional cases had occurred in which chronic inversion

¹ Colombat, Am. ed., p. 186.

² Daillez's Thesis appeared in 1803.

³ Quoted from Ranking's Abstract, vol. 7, by G. Hewitt.

⁴ Courty, *Mal. de l'Utérus*, p. 797.

had been overcome by taxis and pressure, but these held the position of accidental and anomalous feats in treatment, not that of systematic procedures, which it was incumbent upon the practitioner to essay in every case. At this period two cases of chronic inversion were reduced, one of twelve years' standing by Prof. Tyler Smith, of London, by elastic pressure and taxis; the other of almost six months' standing by Prof. James P. White, of Buffalo, U. S., by taxis alone. Each of these gentlemen worked without the knowledge of what the other was doing; and to them belongs the great credit of having systematized, and made subservient to science and humanity, a method which before had been practised in a loose and desultory manner. Soon after their publications, cases of cure affected by taxis alone, or combined with pressure by bags of air or water placed in the vagina, were rapidly reported from different parts of the world. Most notable among these were the cases of Noeggerath, of 13 years' standing; Teale, of $2\frac{1}{2}$ years; West, of 1 year; White of 15 years; and Bockendahl, of 6 years. When it is stated that all these occurred in 1859, it will be fully appreciated how great an impetus was given to this subject by the successes of Smith and White. Within the past ten years cures have multiplied so rapidly as to preclude the mention of individual cases in a work of the character of this; and, although I cannot go so far as to endorse the sanguine prediction of White, made in 1872, that "well directed pressure upon the fundus, if continued long enough, will, in all cases where there are no adhesions, result in restoration or reposition," I do believe that the day has passed when any practitioner would be held blameless by a jury of his peers, who has either left untouched, or amputated a uterus in the condition of chronic inversion without some special reason apart from the mere displacement itself.

The best methods at our command for replacing an inverted uterus I shall now proceed to describe, premising this description with the statement that I do not propose to mention all methods which have been adopted, but only those which are most worthy of reliance. They may thus be presented at a glance:—

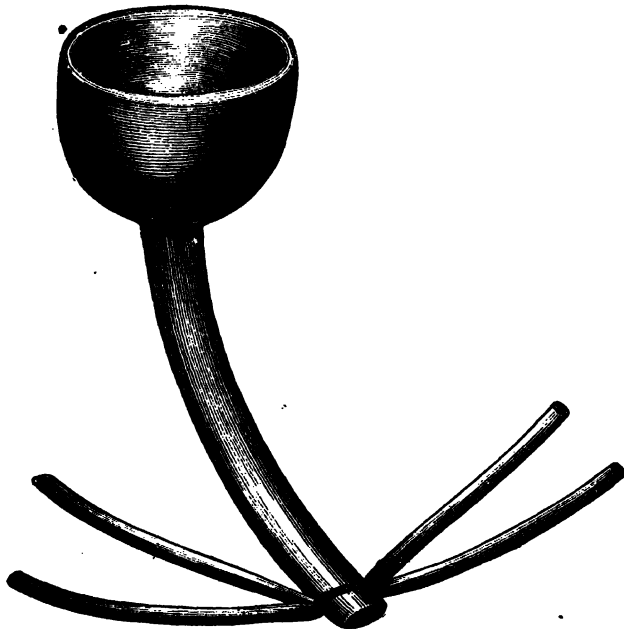
Methods for effecting gradual reduction	{	Elastic pressure by vaginal stem and cup or bulb;
		Elastic pressure by vaginal water-bag combined with taxis;
		Elastic pressure by vaginal water-bags alone;
		A stream of cold water.
Methods for effecting rapid reduction	{	Manipulation by Viardel's method;
		" " Emmet's "
		" " Barrier's "
		" " Noeggerath's "
		" " Courty's "
		" " Thomas's "
		" " White's "

None of these methods are free from danger; in several cases even elastic pressure has excited fatal peritonitis. But gradual reposition is certainly much safer than rapid reduction.

Before the practice of any of them certain preparatory measures calculated to relax the cervical parenchyma, or render its resistance less decided, may be essayed. One of these is the use of belladonna by the vagina in the form of vaginal injections of the infusion, of ointment smeared around the uterine neck, or of hypodermic injection; or by the rectum in form of suppository. The other is the making of two or three longitudinal incisions through the superficial layers of the parenchyma of the neck. This method is a very old one, dating back to Millot¹ in 1773. Since his time it has been repeatedly advised; for example, by Colombat, Gross, Sims, Barnes, and others. Of the benefit of the first of these methods there is little doubt; of that of the second there is none.

Gradual Reduction by Repositor.—This method dates back to Von Siebold,² who employed a curved stem surmounted by a fine sponge, the

FIG. 204.



Cup and stem for making continuous pressure in replacing the inverted uterus.

stem being held *in situ* by a T-bandage. After him it was repeatedly and successfully employed, and to-day it is coming again into favor, having been very recently recommended by Drs. Hicks and Barnes, of

¹ Taylor, *op. cit.*

² Ch. F. Weiss, Paris, *op. cit.*

London, The former employs a solid stethoscope, the large extremity covered by India-rubber; the latter, a hollow caoutchouc cup, fixed to a curved stem. Both of these are supported by a T-bandage.

Before the cup is adjusted, a long compress, consisting of a bag of muslin stuffed loosely with cotton, should be placed across the hypogastrium, so as to extend from the anterior superior spinous process of one ilium to the other, and to lie just above the symphysis pubis. This should be fixed in position by a band of adhesive plaster made to encircle the body entirely. The compress, being about eight inches in circumference, forms a firm ridge across the pelvis, and furnishes counter-pressure against the retreating uterus. The bands represented as attached to the stem of the instrument may consist of India-rubber tubing or of India-rubber elastic bands, by which gentle, steady, and gradually increasing pressure may be kept up.

This constitutes one of the best, if not the very best, of all the means at our disposal for effecting gradual reduction of the inverted uterus. One point requires special attention; sometimes, when the vagina is abnormally voluminous, the uterus gets out of the line of pressure, it bends upon itself above the edges of the cup, and not only does the pressure exerted accomplish no good—it absolutely does harm, and creates the danger of inflammation of the tissue of the uterus. This should be prevented by tamponing around the cup, after it is adjusted, with carbolized cotton, as explained in connection with elastic pressure by the water-bag.

The force exerted by the elastic bands should not be great, for we should look for the desired result not to great but to gradual and steadily sustained pressure.

Elastic Pressure by Vaginal Water-bag.—The demonstration of the important fact, the most important, indeed, connected with this subject, that elastic pressure was capable of greatly aiding reposition of an inverted uterus, belongs to the late Dr. Tyler Smith. I say “greatly aiding,” for he combined taxis with it. It was left for Bockendahl, of Germany, to prove that it could effect reduction unaided. Smith’s plan consists in passing the hand into the vagina, night and morning, and kneading the uterus for ten minutes, and during all the intervening period keeping an air pessary in the canal. Bockendahl simply trusts to elastic pressure alone, thus making an important improvement upon Smith’s plan.

The best method for employing elastic pressure I have found to be this: Pass a Sims’ speculum and tampon around the uterus firmly with carbolized cotton soaked in glycerine, so as to keep it from slipping out of the line of pressure. Then introduce an India-rubber bag, and fill it with water. Cut a strip of adhesive plaster two and a half inches wide, and of sufficient length to extend from the lumbar region between the thighs of the patient and as high up as the navel. Two holes should be cut in it, one for the tube of the rubber bag to pass through, the other to leave the

urethra free. After the bag is introduced into the vagina, this strip of plaster is heated and attached to the surface. The bag may afterwards be rendered more tense by pumping in water, or the amount of its contents may be diminished by turning the stopcock, which prevents its escape. While the method is in operation, the patient should be kept in bed, and all pain quieted by the use of opium. The bladder should be emptied by the catheter, and the bowels, previously thoroughly evacuated, be kept constipated.

A Stream of Cold Water.—This method has not been sufficiently tested to command confidence, but it is worthy of mention and consideration. Dr. Charles Martin,¹ of France, succeeded in effecting reduction in a case which proved rebellious to other means by this, which he tried in the following manner: he introduced the speculum around the inverted uterus twice a day and threw upon the fundus, with force, by means of a syringe, a stream of cold water. Then filling the speculum with cold water, he kept the uterus immersed for three or four minutes. My impression is that, simple as this method is, we shall hear of it again.

There is no limit to the time during which efforts at gradual reduction may be persevered in. Such a limit is established solely by the patient's tolerance of the method tried. A case is mentioned in this chapter in which elastic pressure was kept up for eighteen days with successful result. Sometimes, however, the patient cannot tolerate elastic pressure, or that by a repositor, for symptoms of peritonitis result from their use. Then it is that *anæsthesia* and rapid reduction offer themselves as valuable resources.

Rapid Reduction by the Old Methods of Taxis.—Taxis has been practised for the reduction of chronic inversion certainly since the beginning of this century, and perhaps before that time, in two entirely distinct methods. First, the manipulations of the operator are directed to the constricting cervix, in order to overcome resistance there, and to return first the parts which last escaped. Second, these manipulations are directed to the body, in order to return first the parts which escaped first. The first of these methods is thus described by Capuron:² "If the orifice be not sufficiently dilated to allow the inverted portion to return easily, it is a better plan to take the tumor in the palm of the hand, with the fingers distributed around its pedicle, and to reduce first the portion which was inverted last, as if we were dealing with a hernia." "We encounter at this point," says Aran,³ "two opinions which have arisen in relation to the reduction of the uterus inverted during labor; one party desiring to return first the parts which escaped last, subjecting the uterus to a general compression, so as to soften it to a certain extent and force it to pass the orifice

¹ Gaz. des Hôp., 1853.

² Mal. des Femmes 2d ed., p. 510.

³ Mal. de l'Utérus, p. 901.

little by little, commencing with the least voluminous parts. . . . Arrived at the tumor, if the operator wishes to employ the first method, he kneads it so as to soften it, and cause it to pass more easily through the constricted orifice in which he engages his fingers." Becquerel¹ describes it thus: "It is advisable, as far as practicable, to return first the parts which last escaped; for in this way we dilate in advance the muscular fibres which oppose reduction. (P. Dubois Danyau.) . . . M. Velpeau considers this the best method."

The second method of taxis consists, not in manipulating the "constricted orifice in which he engages his fingers," so as to "dilate in advance the muscular fibres which oppose reduction," as Aran and Becquerel express it; but in dimpling or indenting the fundus itself, so as to make of the indented or invaginated portion a species of wedge, which is forced into the cervical constriction. In recent cases of inversion, occurring, as the vast majority of these cases do, after labor, 350 out of 400 reported by Crosse having done so, the centre of the fundus may be indented and carried up through the cervical canal; and even in chronic cases such an invagination has been attempted. My impression is that the manipulations practised on the fundus in chronic cases act not in this way, but in overcoming cervical resistance, and thus accomplishing in a more indirect and imperfect way what the French method, styled the method of Viardel by Becquerel, does by engagement of the fingers within, and direct expansion of, the cervical constriction. It is scarcely applicable to other than recent cases.

The diagnosis having been clearly made and reduction determined upon, the bowels and bladder should be emptied, and the patient put under the influence of an anæsthetic, and laid on her back upon a strong table. The operator should always be attended by three or four reliable counsellors, upon whom he may call not only for advice but physical aid. As the late Prof. Elliot has pointed out, the strength of one man will often fail to accomplish what that of several, replacing each other in rapid succession, will readily effect. Having thoroughly oiled one hand, the nails of which have been pared, the operator should slowly dilate the vagina so as to introduce it, and grasp in its palm the entire tumor. The other hand should be laid upon the abdomen so as to press just over the ring which marks the non-inverted cervix, and oppose the force exerted through the vagina, so as to prevent too great stretching of this canal.

In a case of four years' standing, which I attended with Dr. Joseph Worster, of this city, and which had been subjected to eight attempts previous to my seeing it, each varying in duration from two to three hours, I suggested substituting for the hand a cone of boxwood four inches long. The patient being very thin, this could readily be inserted into the

¹ Mal. de l'Utérus, tome 2, p. 314.

abdominal ring of the uterus, and it was gradually forced down into the inverted fundus for such a distance as to dilate the cervix and allow reposition. Since the experience gained in that case I have always employed this abdominal plug for counter-pressure, except in fat women, and this course has likewise been adopted by Byrne and others.

In attempting reduction by the hand in the vagina clasping the inverted uterus, the operator should not adhere too long to one plan of manipulation, but try one after the other the methods of manipulation which will now be mentioned.

Emmet's Method.—This consists in giving to the finger encircling the cervix a decided motion of extension, while counter-pressure is actively kept up by the fingers over the abdominal ring so as to expand this by the conjoined action of the two hands. I had supposed this method to be identical with that of Viardel, but its proposer declares it to be different from it in many essential respects, and speaks highly of its merits. A full exposition of it will be found in his work upon "The Principles and Practice of Gynecology."

Barrier's Method consists in spreading the four fingers around the uterus, pressing the thumb against the fundus, and forcing the neck against the curve of the sacrum as a point of resistance.

Noeggerath's Method consists in placing the index finger upon one horn of the uterus, the thumb upon the other, and so compressing as to invert one or both cornua. Before reinversion of the neck it should not be tried. For reducing the body after the neck has yielded it is a most valuable plan. I have succeeded by it in three out of five cases which I have treated.

Courty's Method consists in passing the index and middle finger up the rectum, dipping them into the cervical ring, and thus gaining a point of resistance. It is one of the best at our command, and may be combined with Noeggerath's method, one being directed to reduction of the neck, the other to that of the body.

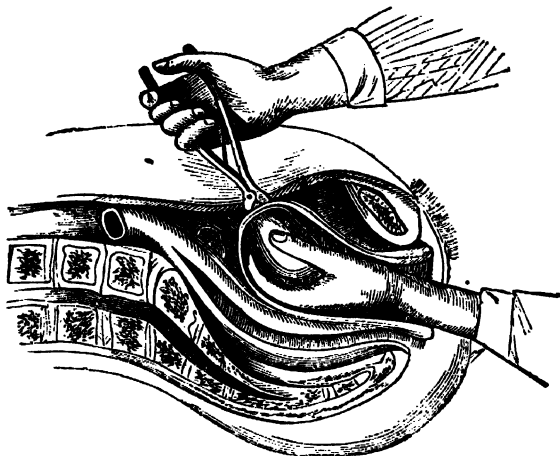
Thomas's Method consists in abdominal section over the cervical ring, dilatation with a steel instrument, made like a glove-stretcher, and reposition of the inverted uterus by any one of the methods mentioned, by the hand in the vagina. Fig. 205 will render this clear.

This procedure, let it be remembered, is not offered as a method of treating inversion of the uterus, but as a substitute for amputation. Few cases will, I think, resist elastic pressure and judicious taxis; but that some will do so cannot be questioned. It is to save these few cases from amputation that I suggest abdominal section.

One of the cases operated on in this way has proved fatal. Let it not be forgotten that a certain number of those cases treated by elastic pressure and by taxis likewise do so, for, as in my second case, these operations are often performed upon exsanguinated women whose blood is improve-

rished. One instance of death after reduction by elastic pressure is recorded by Dr. Tait in the eleventh volume of the London Obstetrical Transactions, while one of the earliest cases on record reduced by taxis, that of Dr. White, of Buffalo, likewise ended fatally.

FIG. 205.



Replacement of uterus by dilatation through abdomen.

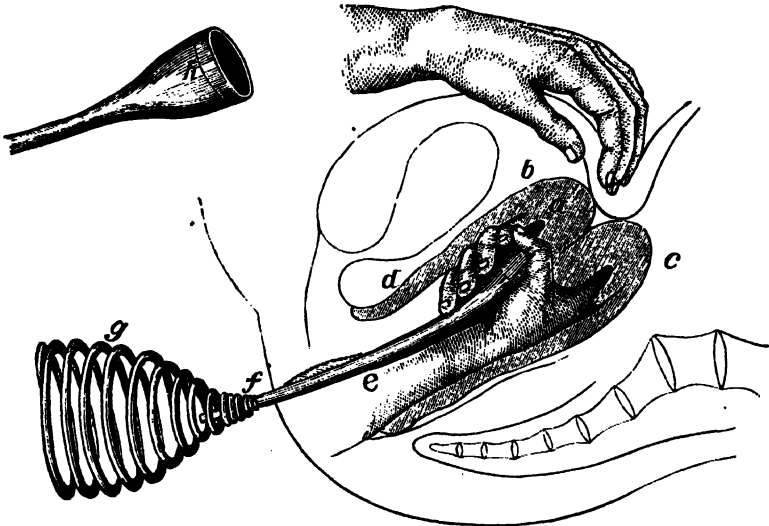
If a case should prove rebellious to taxis repeatedly and intelligently applied, and to prolonged and powerful elastic pressure, what is to be done? Only two courses have been open to us; one to leave the case unrelieved, the other to perform amputation. In an elaborate report of cases of inversion given in the American Journal of Obstetrics for August, 1868, the results in fifty-eight cases of amputation are given. By this statement it will be seen that nearly one-third of all operated upon died, and let it not be forgotten that this number died, not in being cured, not in an effort, even, at attaining perfect health, but in an attempt at purchasing immunity from a series of dangerous and annoying symptoms at the price of that organ of which Hippocrates says, "Propter uterum est mulier."

It is incumbent on me to state that this method has not received the endorsement of the profession. Appreciating this I should have omitted it entirely from enumeration here, did I not feel that in the future it will receive more favorable consideration and prove of real value.

The use of a repositior by which to make direct pressure and aid in reduction has been resorted to by Depaul and others. Prof. J. P. White has successfully employed one which by its simplicity and efficacy makes it worthy of especial mention. Fig. 206 shows this instrument, and, likewise, makes evident the method of reduction which the experience of nine cases extending over a period of fifteen years has led him to adopt.

Excellent repositors have likewise been invented by Aveling and Byrne. The latter of these is constructed upon the best mechanical principle which has ever been applied to this process, consisting of a cup which is made shallower and less capacious by the action of a screw at its lower extremity, as the inverted uterus gradually returns to its place. I have employed it with perfect success in one case, and esteem it very highly.

FIG. 206.



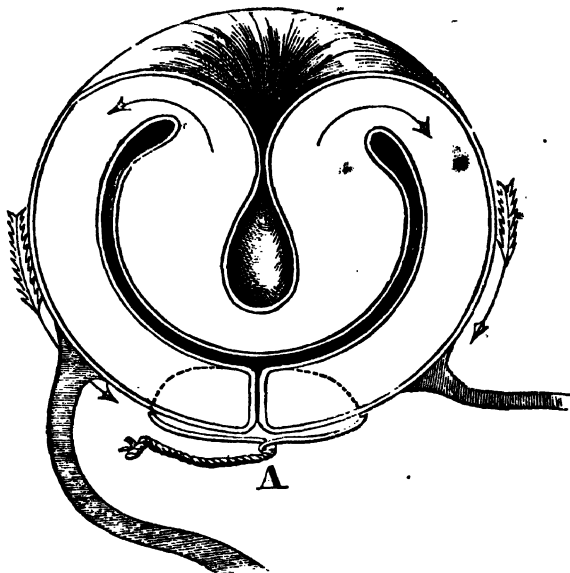
Rapid reduction by White's method. Operator grasps uterus, *a*, and presses his chest against spiral spring, *g, f*, which forces cup of repositor against fundus.

It is impossible to set an absolute limit to the time which should be allotted to one attempt at immediate reduction, but these efforts cannot be persisted in much longer than one or two hours without great danger of cellulitis or peritonitis. It is true that numbers of successful cases are on record in which from three to five hours have been spent in continuous exertion before success was accomplished, and in which no unfavorable symptoms have arisen; but a safer and more judicious course would be to desist after a reasonable effort, secure what has been gained by placing a caoutchouc bag in the vagina, or closing the os uteri by silver suture as practised by Emmet, after the method shown in Fig. 207, administer a large dose of opium, and make another attempt in thirty-six or forty-eight hours. Manipulation should then be cautiously repeated for about the same period, and again, in case of failure, followed by the air bag, or closure by suture.

Methods of Amputating.—Although it cannot be denied that instances may present themselves in which, from impossibility of returning the inverted uterus, removal of the whole organ is indicated, it is equally

undeniable that the operation has been resorted to very often upon insufficient grounds and before efforts at reduction had been fairly tried. Tyler Smith succeeded after persevering with elastic pressure for eight days,

FIG. 207.



Partially restored uterus sustained by closure of os externum. (Emmet.)

and Dr. F. A. Ramsay,¹ of Knoxville, Tennessee, after seventeen or eighteen days of effort. Does any one doubt that in the hands of many less persevering practitioners both these cases would have been treated by amputation before success was attained? Amputation of the inverted uterus will surely be less frequently performed in the future than it has been in the past. It is destined to assume among operative procedures its proper place as a last resort. In addition to its own manifest and inherent dangers it must ever present these great objections:—

1st. Hernia of the abdominal or pelvic viscera may have taken place into the inverted sac;

2d. It frequently produces emansio-mensium and its train of evils;

3d. It necessarily results in sterility.

It is impossible to conceive of circumstances which would justify the procedure before full consultation with the most able counsel attainable.

Removal of the uterus, although attended by great danger, often ends in recovery. This will not be wondered at when it is borne in mind that even tearing away of the organ has been several times recovered from. Radford, J. C. Clarke,² and others have reported cases in which an in-

¹ Taylor, *op. cit.*

² Dublin Journal, 1837.

verted uterus has sloughed off from strangulation without a fatal issue, and Osiander for many years showed a patient in his lecture-room from whom, after delivery, the midwife tore away not only the placenta but the inverted uterus to which it was attached. A case of similar kind is recorded in the *Gazette des Hôpitaux* for 1842. One child being born, the midwife felt the breech of another as she supposed. Around it she passed a handkerchief, pulled with all her force, and dragged away uterus and annexæ. The patient recovered!

A comprehensive view of the results of amputation is presented by Dr. West in the following table:—

		Recovered.	Died.	Operation abandoned.
Uterus removed by ligature	45	33	10	2
“ “ knife or écraseur	5	3	2	
“ “ knife or écraseur, preceded by the ligature	9	6	3	
	<u>59</u>	<u>42</u>	<u>15</u>	<u>2</u>

Out of 58 cases of amputation collected in the report in the German journal recently alluded to, 18 were fatal—nearly one-third.

Should it be deemed advisable to resort to this procedure in spite of the dangers incident to it, there are four methods by which it may be performed: the knife or scissors preceded by the ligature; the écraseur, preceded by the ligature; the elastic ligature; and the galvano-cautery.

Experience proves that removal of an inverted uterus by the knife, or even the écraseur, is likely to be followed by profuse and dangerous hæmorrhage. To avoid this, a method advised by Dr. McClintock, of Dublin, may be adopted. It consists in the application of a strong ligature for from two to three days before the operation. This obliterates the vessels, and, just about the time that decomposition of the strangulated organ begins, amputation is practised. Even should the galvano-cautery be resorted to, so great is the danger of immediate and remote hæmorrhage, that it is advisable to precede its use by that of the ligature for a few days. Courty strongly recommends ligature of the neck of the inverted organ by a rubber ligature, which he tightens on the second day as much as possible. The uterus is amputated by this on the twelfth or fourteenth day. During the use of all these methods pain and nervous disturbance should be quieted by the hypodermic use of morphia, and septicæmia obviated by antiseptic vaginal injections.

Hegar and Kaltenbach¹ recommend the following plan for amputation. Sutures of metal or silk are passed through the cervix, high up, and tightly drawn so as to constrict all vessels, and completely close the peritoneal cavity. Then, by any means which the operator may select, the body of

¹ Hegar and Kaltenbach, *Op. Gyn.* p. 279.

the uterus is amputated. By this procedure hemorrhage is kept under control, and the parts are so arranged as to favor subsequent union.

Removal of the uterus by ligature alone should never be attempted. Not only have we better and safer means; statistics prove this to be an especially dangerous method. Out of 33 cases thus operated upon, 17, over half, ended fatally.

Resumé of Plans of Treatment.—Let us suppose that a case of chronic inversion applies for treatment to a general practitioner, what are the methods by which he could most easily and safely test the question of his ability to overcome the difficulty without resorting to the aid of a specialist? I would advise the following course as having these advantages—it is often equal to the accomplishment of replacement; even when it does not prove so, it is safe; and it does not ordinarily alienate the co-operation of the patient, as an injudicious course may very readily do by the discomfort which it induces.

1st. The bowels should be thoroughly evacuated by a course of mild cathartics; vaginal irritation and engorgement be relieved by copious hot vaginal injections; and uterine congestion, which always exists, be overcome by rest.

2d. Pressure by the cup and stem should then be fully tried for a fortnight, hot vaginal injections and inunction of the cervix with belladonna being employed at the same time.

3d. Elastic pressure by vaginal water-bags should then be tried, the uterus being kept in the line of pressure by means of a tampon of antiseptic cotton saturated with glycerine.

4th. Should this not produce good results in a week, and no untoward symptoms have developed, taxis should be tried for a short time once or twice a day.

5th. Should success not now crown his efforts, the practitioner might try the use of a stream of cold water projected against the inverted fundus, or this might be combined with elastic pressure, taxis, and the other means just mentioned.

All these means failing, resort to more radical, efficient, and hazardous ones will now become necessary. But let the practitioner remember that so long as the temperature and pulse remain normal, or nearly so, and there is absence of severe pain, he may with safety persist in the mild efforts at reduction which have been mentioned, even for several weeks. Should every general practitioner do this systematically and intelligently, few, very few cases of this accident would fall into the hands of the specialist, and a great deal of fame now concentrated upon a few would be distributed among many.

The day for rapid and brilliant replacements of the uterus in condition of chronic inversion has passed and gone. There are unquestionably cases which may call for immediate or at least for rapid replacement, and others

which will demand the most heroic resources of surgery, from the fact that all milder ones have failed. But the rule should, with our present light upon the subject, be positively and unhesitatingly accepted, that gentle, slow, and safe methods should always take precedence over rapid, harsh, and dangerous ones. As a very general rule time is here a matter of no moment. Certainty of result and freedom from danger are the great desiderata. A case of chronic inversion presenting itself under the circumstances which are ordinarily attendant upon the condition, the surgeon who selects the plan of rapid over that of gradual reduction is exposing his patient to risks which might have been avoided in the attainment of a result which would have been as likely under the safe as under the dangerous course. If all goes well after adoption of the latter, neither surgeon nor patient will question the wisdom of the choice; but supposing that a fatal issue occurs!

It must be appreciated that I do not undervalue the serious procedures which have been recommended and practised for obstinate cases of inversion. I would unhesitatingly resort to them after failure with safer and less efficient procedures. It is a resort to them as a matter of election, and before the milder means have been tried, that I deprecate—a willingness to weigh the safety and interests of the patient against any other consideration that I condemn.

As one looks back upon his experience in surgery, he can see many cases which, if he could have availed himself in them of knowledge which did not exist a few years ago, would in all probability have had a favorable instead of a fatal result, and he feels regret. If he have at his disposal resources which could have produced such a happy change in the record, and which he from choice did not use, regret is apt, in the mind of a conscientious man, to merge painfully into remorse.

CHAPTER XXX.

PERIUTERINE CELLULITIS.

History.—The history of this affection presents one of those examples, which are often repeated in medical literature, of a subject which was once understood being subsequently completely overlooked and forgotten.

There can be little doubt that it is to this disease that allusion was made by Archigenes, who flourished in the second century, and whose account of it was subsequently repeated by Oribasius in the fourth, and Aëtius and Paul of Ægina in the sixth and seventh. The last two unquestionably refer to it under the head of "Abscess of the Womb," for

in one passage Paulus especially speaks of cases in which the "aposteme is seated about the mouth of the uterus."

The modern history of the subject may be thus stated :—

Described by Richard Wiseman, ¹ England, as "Distempers of the uterus in childbed,"	1679
" Nichols, Puzos, ² France, as "Dépôts Laiteux,"	1743
" Bourdon, a pupil of Récamier, as "Fluctuating tumor of true pelvis,"	1841
" Doherty, Ireland, as "Chronic inflammation of the appendages of uterus,"	1843
" Marchal de Calvi, as "Intra-pelvic phlegmonous abscess,"	1844
" Churchill, ³ Ireland, as "Abscess of uterine appendages,"	1844
" Lever, England,	1844

It will thus be seen that after being appreciated, then entirely forgotten, then for a second time brought into notice, the knowledge of this affection languished for nearly two centuries, to be suddenly restored by the efforts of four investigators who entered the field almost simultaneously. It would be unjust to a conscientious observer, M. Auguste Nonat, not to mention the great influence which his writings have had in advancing our knowledge ; but when he commenced his investigations in Hôpital Cochin, in 1846, the morbid state which he subsequently did so much to elucidate had already received considerable attention in Great Britain.

Definition, Synonyms, and Frequency.—This disease, which is now known to be of frequent occurrence, consists in an inflammation of the adipose and areolar tissue lying behind, in front of, and at the sides of the uterus, and extending up between the layers of serous membrane which make the broad ligaments. It has been described by different writers under the following titles : parametritis, periuterine phlegmon, inflammation of the broad ligaments, pelvic abscess, and pelvic cellulitis. The last term, which was applied to it by Sir James Simpson, indicates the nature and seat of the disease ; but it is open to the grave objection of being too general in its application, and not sufficiently confining within proper limits a distinct and well-defined affection.

Anatomy.—"The sub-peritoneal pelvic tissue," says Dr. Savage,⁴ in his work on the Female Pelvic Organs, "fills up all that part of the pelvic cavity between the pelvic 'roof' and floor of the pelvis, which is not occu-

¹ McClintock, "Diseases of Women," p. 1.

² Drs. West and McClintock date the appearance of Puzos, "Traité d'Accouchement," 1759. They are probably in error, as Bernutz and Nonat both date it 1743.

³ West, "Diseases of Women," Am. ed., p. 310.

⁴ Savage, *op. cit.*

pied by the viscera, and is the sole bond of union between them." Any one can satisfy himself as to the abundance of loose cellular tissue in the pelvis, by even a rough dissection. It will be found in the broad ligaments in great abundance separating their contents, between the vagina and rectum, the rectum and sacrum, the uterus and bladder, the bladder and abdominal parietes, and investing the psoas and iliac muscles. The relations of the urethra and rectum to this tissue are peculiar, each being isolated in a sheath or canal which may be removed with ease.

Everywhere around the pelvic organs cellular tissue exists except between the peritoneum and uterus. Here so little is discoverable that some have ventured to deny its existence, while all admit that over the body of that organ it is difficult of demonstration. Dr. Farre¹ declares that along the median line and over the whole fundus he has found the peritoneum inseparable from the uterus, except after prolonged maceration. On the sides of the organ and at the cervix the connection is not so intimate, loose cellular tissue existing at these points to such an extent as to permit of the investing membrane gliding upon the uterus. M. Goupil,² who has made a special study of this tissue, declares that it is so small in amount at the point of contact of the peritoneum and vagina, and in front and rear of the uterus, that "its presence can scarcely be determined."

Pathology.—According to the wide range given to the affection by the majority of English pathologists, this areolar tissue is the seat of the disease under consideration, which may affect any or all of its parts. Drs. West, Simpson, and most British writers, except Dr. Bennet, adopt this view, and regard as instances of the affection any inflammation of the cellular tissue within the pelvis. But this evidently leads to great confusion. It is certainly not conducive to clearness of comprehension to blend the description of iliac, psoas, and perirectal abscesses with this disease.

French writers,³ on the contrary, regard as instances of periuterine cellulitis only inflammation of the cellular tissue of the broad ligaments and of that immediately in contact with the uterus at its junction with the vagina and bladder. While admitting that inflammation originating here may spread, by continuity of structure, to other areolar tracts in the pelvis, they regard these as complications, designating them by different appellations, and do not admit them as elements of this affection. This is the definition which I would adopt, and to express it clearly have employed the term periuterine, in place of pelvic, cellulitis.

Periuterine cellulitis has three stages: 1st, the stage of active congestion; 2d, that of effusion of liquor sanguinis; 3d, that of suppuration. In its course it may be likened to an ordinary furuncle; at first there is simple congestion accompanied by pain, heat, and swelling; then liquor san-

¹ Cyc. Anat. and Phys., Sup., p. 631.

² Becquerel, p. 441, vol. i.

³ Aran, Mal. de l'Utérus, p. 675.

guinis is effused, which creates hardness and tension, and lastly suppuration occurs, and ends the morbid process, unless one of two other terminations takes place. Resolution may occur, or, in place of suppuration, the areolar tissue involved may be destroyed, as it so generally is in anthrax and phlegmonous erysipelas, and come forth as a sloughing mass.

The term phlegmon, now almost obsolete with us, but still in use on the continent of Europe, signifying inflammation of areolar tissue, is strictly applicable to this affection. Its source is similar to that of areolar inflammations in other parts of the body, and its three stages are identical with theirs.

The most common seat of periuterine cellulitis is the areolar tissue of the broad ligaments, and generally that of one side only is affected.

In a certain number of cases where no affection of the areolar tissue of the broad ligaments exists, circumscribed tumors, in immediate contact with the womb, have long been noticed. Lisfranc supposed them to be due to partial parenchymatous metritis, "engorgements," which had resulted in enlargements of one part of the organ; and no one contradicted him until M. Nonat,¹ about the year 1849, described them as being due to phlegmonous inflammation in the areolar tissue immediately around the uterus, *i. e.*, between the cervix and rectum, the cervix and bladder, and immediately by the side of the neck. The existence of this variety of cellulitis has been denied by M. Bernutz, who sustains his position by abundant argument. In reference to it, I will merely say here, that there are, so far as my knowledge extends, only two cases of such limited cellulitis substantiated by autopsic evidence, one reported by M. Demarquay,² the other by M. Simon.³ Nevertheless, judging from clinical observation, one is inclined to side with the view of Nonat rather than with that of Bernutz. There are many cases in which abscesses in the broad ligaments point and discharge anteriorly or posteriorly to the cervix, but these come within a different category. The broad ligaments and their entire contents, cellular tissue, ovaries, and Fallopian tubes, are more frequently affected than any other parts, and M. Aran goes so far as to say that the collections of pus occurring in periuterine cellulitis "belong more particularly to the ovaries and tubes." In post-mortem examinations these parts are often found imbedded in a mass of effused material, the ovaries, one or both, in a state of suppuration, and the tubes inflamed and filled with pus, or constricted at both uterine and ovarian extremities and dilated by sero-purulent material so as to constitute tubal dropsy. I have examined the post-mortem reports of cases by a number of authorities with reference to this point, and, rejecting only those in which the examination was made in too careless a manner to allow of their admission, I present them in the following table:—

¹ Op. cit., p. 237.

² *Gazette des Hôpitaux*, April 17, 1858.

³ *Bull. de la Soc. Anat. de Paris*.

No. of Case.	Authority	Seat of Purulent Collection.
1.	M. Nonat.	Behind the uterus connecting with suppurating cyst in left ovary; small abscess in right ovary.
2.	M. Nonat.	Behind uterus and rectum extending into broad ligaments of both sides.
3.	M. Nonat.	On left side extending from uterus to ilium.
4.	M. Nonat.	Behind uterus and vagina extending into left broad ligament; another the size of a hen's egg just behind the uterus, opening into a third, very large, extending to sigmoid flexure and into broad ligament.
5.	Dr. West.	Left broad ligament.
6.	Dr. West.	Opposite right sacro-iliac synchondrosis under psoas muscle, another to the left of and behind the rectum.
7.	Dr. West.	Left broad ligament.
8.	Dr. McClintock.	Left broad ligament.
9.	M. Demarquay.	In cellular tissue between uterus and rectum and also in recto-uterine pouch of peritoneum.
10.	M. Simon.	Size of a small orange, between the bladder and uterus, sending conoidal prolongation into left broad ligament. Its limits were as follows: base of bladder in front; neck and body of uterus behind; peritoneum above; vagina below; at the sides it ran off into the broad ligaments.
11.	M. Aran.	Left broad ligament.
12.	M. Aran.	Left ovary, right tube, with pelvic adhesions throughout.
13.	M. Bourdon	Size of an apple in left broad ligament.
14.	M. Aran.	At side of uterus and in the left broad ligament.

It will thus be seen that of this number, which is large when it is remembered that the disease rarely ends in death, but two cases present instances of cellulitis, uncomplicated by disease of the cellular tissue of the broad ligaments, ovaries, or tubes. One of these, that of Simon, is conclusive of the possibility of such disease; that of Demarquay is doubtful, for with the abscess in the cellular tissue, there was also one in the cul-de-sac of Douglas. The purulent collections in this disease may be results of morbid action in the cellular tissue, the ovaries, or the Fallopian tubes. In other words, with the disease known as cellulitis we often, indeed generally, have other affections, some of them, in the present state of our knowledge, not separable from it, which attend upon it as complications.

Complications.—The complications of periuterine cellulitis are—

Pelvic peritonitis;

Ovaritis;

Fallopian salpingitis;¹
 Endometritis;
 Uterine displacement.

The occurrence of these complications with cellulitis is so frequent that they may, at least the first three, almost be regarded as elements of it, when it exists in severity. They are, indeed, universally present where the tissue of the broad ligaments is seriously involved, as will be seen by reference to autopsic evidence contained in any of the works upon the subject. The fact of the frequent coexistence of endometritis should be especially noted, for great injury may be done by local treatment of it, under the supposition that it is the cause of symptoms which in reality are the results of cellulitis.

Course, Duration, and Termination.—It is necessary that I should here inform the reader that the account which I shall give of this part of our subject will differ essentially from that generally found in systematic works, for the reason that, regarding pelvic cellulitis and pelvic peritonitis, which are usually treated of synonymously, as different affections, I shall attempt to describe them separately. Cellulitis proper, that is, uncomplicated by other diseases, rarely passes into a chronic state, but usually in the course of two or three weeks passes off by resolution or ends in suppuration, the former being much the more frequent termination. Any one of its usual complications, however—peritonitis, endometritis, ovaritis, or salpingitis—may become chronic, and thus leave the impression upon the mind of the observer that the original affection has done so. Or one or more abscesses may discharge themselves by long sinuses which fail to allow of their complete evacuation, and may continue to pour out pus for months or even years. In saying that cellulitis rarely becomes chronic, I look upon chronic pelvic abscess rather as one of its results than one of its stages. If the case be of acute character and occur as a sequel of parturition, suppuration may take place in a few days, but ordinarily, even under these circumstances, it does not occur for two or three weeks. In a chronic case the effused matter may remain hard, resisting, and ligneous for months without showing signs of softening, but such instances are exceptions to the rule. After suppuration has occurred the disease may follow one of three courses:—

1st. The accumulated pus may discharge itself and the abscess gradually dry up and disappear:

2d. The empty sac, lined by pyogenic membrane, may for an unlimited time go on pouring out pus.

3d. Small abscesses may form and discharge in one part, then others may do so in another, until the whole pelvic areolar tissue is perforated by them and by fistulous tracts connecting them.

¹ σαλπινγίς, "a tube."

There are various outlets for the imprisoned purulent accumulation :—

- 1st. Through the abdominal walls or saphenous openings ;
- 2d. Through the pelvic viscera, bladder, rectum, vagina, urethra, or uterus ;
- 3d. Through the floor of the pelvis near the anus ;
- 4th. Through the pelvic foramina, obturator, or sacro-ischiatic ;
- 5th. Through the pelvic roof into the peritoneal cavity.

Sometimes the purulent collection burrows into the surrounding tissues and evacuates itself at a distance. In one case which I saw with Dr. Echeverria, it passed through the sciatic foramen, and, burrowing upwards and forwards, came forth near the great trochanter. It may thus take so eccentric a course as to mislead the practitioner as to the seat of the abscess.

The most frequent channels of evacuation are the vagina and rectum, in the non-puerperal form, and probably the abdominal walls in the puerperal, or at least the results of Dr. McClintock's¹ carefully noted cases would lead us to believe so. In 37 puerperal cases treated by him which ended in suppuration, 20 abscesses discharged in the iliac regions, 2 above the pubes, 1 in the inguinal region, and 1 beside the anus. Of the remaining 13, 6 were discharged per vaginam, 5 per anum, and 2 burst into the bladder. In the non-puerperal variety it is extremely rare for the abscess to discharge externally, and fortunately in both forms it is rare for it to burst into the perineum.

Prognosis.—A guarded prognosis should always be made as to the time of recovery, for no amount of experience can foresee the course of the affection; whether the effused liquor sanguinis will disappear by absorption in three weeks; whether the discharge of one abscess will end the patient's suffering; or whether a chronic induration will exist for a great length of time. But fortunately it may be stated, that the prospects as to life are decidedly favorable, though in cases occurring just after parturition, there is always some danger from general peritonitis.

Causes.—The disease usually occurs as a result of one of the following causes :—

Parturition or abortion ;

Inflammation of uterus or ovaries ;

Direct injury from coition, caustics, pessaries, operations, or blows.

Parturition or abortion produces, according to statistics, from one-half to two-thirds of all the cases. Even this large proportion I believe to fall short of the truth, from the fact that those collecting the statistics from which the deductions were drawn made no distinction between this disease and pelvic peritonitis. Cellulitis will very rarely be met with, except after the parturient process. It is true that, when the puerperal state

¹ Op. cit.

exists as a predisposing cause, exposure to cold, fatigue, over-exertion, etc., will excite it; but under these circumstances they are merely immediate and exciting influences.

Inflammation of the Ovaries or Uterus. It is rare to meet with the affection in a non-puerperal patient, as the result of exposure, unless she be suffering from disease of these organs. Aran believes disease in the ovaries to be "almost always the cause." It is certain that these organs are generally diseased where the affection exists, but it is difficult to determine whether as a complication, or as the first link in the chain. In the histories of fourteen autopsies which I have collected, the state of the ovaries is mentioned in ten. Out of these they were affected by inflammation in seven. In some of the seven cases, abscesses existed; in others their tissue was in part destroyed, and in others they had entirely disappeared. Any chronic or acute disease of either the uterine parenchyma or mucous lining, may also result in it, and I have more than once seen it follow applications of mild character to the cavity of the uterus.

Direct injury is by no means a rare cause in non-puerperal cases, though it generally proves active in those suffering from previous uterine or ovarian disorders. Thus it may follow operations upon the neck or body of the uterus, slitting the neck for flexion or contraction, for example, or simple dilatation by a tent. It may result from efforts at removal of intra-uterine growths, and one fatal case that I have met followed the ligation of hæmorrhoids.

The important fact, that this disease is usually not an idiopathic affection, but one symptomatic of uterine or ovarian inflammation, has been especially insisted on by Dr. Matthews Duncan, who first drew attention to it as early as 1853.

Symptoms.—The acute form, and more especially that occurring after parturition, is usually ushered in by very decided symptoms, of which the most constant are the following:—

- Chill;
- Increased thermometric range;
- Pain;
- Fever;
- Dysuria;
- Metrorrhagia.

The chill, though sometimes absent, is a very general symptom. No sooner does it pass off than the pulse rises to 110 or 120, increased heat is felt in the hypogastric region, and pain, which for a number of hours or perhaps days before was just perceptible, comes on with considerable violence. The thermometer shows marked increase of animal heat, the mercury rising to 103° or 104°, and, in severe cases, even higher. With these general symptoms there will be others pointing to the rectum and bladder, and should the affection exist in a menstruating woman the flow

may be much increased. Even when the patient is not menstruating, uterine hemorrhage sometimes, though not frequently, comes on.

But he who awaits these symptoms for diagnosis will be led into many errors of omission, for subacute cases very generally, and acute cases sometimes, fully develop themselves without them.

All cases may be brought under three heads as to severity of symptoms :—

1st. Cases accompanied by chill, fever, pain, and ordinary signs of inflammation ;

2d. Those accompanied by pain without chill or fever ;

3d. Those marked by scarcely any symptoms except extreme feebleness and some sense of pulsation and weight about the pelvis, with hectic fever towards evening.

Cases which have assumed the chronic form will present themselves with such a history as this : a patient who was delivered one, two, or three months ago has not recovered her strength, but is very feeble, has no appetite, and feels nervous, depressed, and feverish towards evening. She has no absolute pains, but fears that something is wrong about the womb, for now and then she feels a sensation of throbbing, tension, and weight about that organ, which is increased by defecation, urination, and walking. This prompts to physical exploration, which establishes the diagnosis.

Physical Signs.—Physical exploration is the means on which we must rely for a rapid and certain determination of the character of these cases. Should the finger be introduced into the vagina during the first stage, the parts will be found to be very warm, and perhaps a swollen and œdematous spot may be detected. Upon pressing in different directions great sensitiveness will be observed, and by conjoined manipulation a particularly sensitive point will be detected, usually on one side of the uterus.

As the second stage, or stage of effusion, advances, induration occurs in the areolar tissue affected, and then, by careful vaginal touch combined with external manipulation, a tumor as large as a walnut, a goose's egg, or an orange, may be detected in one of the broad ligaments, or in the tissue around the cervix.

But the examiner must not suppose that the mere introduction of the finger into the vagina will accomplish a discovery which often requires the greatest care and most thoughtful attention in examination. The finger being passed up to the cervix, and the other hand placed upon the hypogastrium so as to make counter-pressure, it should be carefully pressed against Douglas's cul-de-sac and all around the cervix over the base of the bladder and as far as possible towards the fundus. Then it should be made in a similarly careful manner to traverse the sides of the pelvis where the broad ligaments are placed, and last of all, those parts below the pelvic roof. For one sufficiently practised in this kind of examination

this procedure will generally be sufficient to determine the existence of even a very small point of induration on the sides or in front of the uterus. Sometimes, where it is posterior to that organ, a rectal exploration will throw much additional light upon the case.

Should the disease have advanced to its third stage, in addition to the signs already noted, the uterus, which, as already mentioned, is generally displaced, is now pushed from its normal position, in a direction opposite to the accumulated pus. Sometimes it lies upon the floor of the pelvis, at others it is in a state of anteversion, retroversion, or lateroversion, and, more rarely, sharply flexed, the body having remained movable after the cervix has become fixed.

Into whatever malposition it has been forced it remains to a certain extent immovable, from fixation by adhesive lymph. But this fixation is by no means so complete, so universal, as in pelvic peritonitis. I feel satisfied that I have seen two unquestionable cases in which no fixation of the uterus existed at all. This, however, is very rare. Nonat has even gone so far as to declare that the phlegmonous mass itself may be movable, and Dr. Duncan reports one case which appears to verify this statement. I have never seen an instance in which this mass was not firmly fixed.

Differentiation.—The diseases with which it may be confounded are—

- Fibrous tumors ;
- Hematocele ;
- Pelvic peritonitis ;
- Early pregnancy.

Fibrous tumors are painless, free from tenderness, and movable in the pelvis. They are unaccompanied by chill, fever, and other signs of inflammation, and are closely attached to the uterus, so as to form part of it. The tumors resulting from cellulitis are the contrary of all this, and appear firmly attached, like bony growths, to the walls of the pelvis.

Hematocele occurs suddenly with uterine hemorrhage, and is marked by prostration, coldness, and other symptoms of loss of blood. The tumor created is soft in the beginning and grows hard ; that of cellulitis is hard in the beginning and tends to softening.

Pelvic peritonitis shows the ordinary signs of peritoneal inflammation, great tendency to relapse at menstrual periods, excessive pain and tenderness, and produces no distinct tumor in the beginning, but hardening of the whole pelvic roof. Later, a small tumor may be discovered, but it is usually posterior to the uterus and not on one side of it. The uterus is less movable than in cellulitis, and when the body is fixed the cervix sometimes moves under pressure.

Dr. Geo. Engelman¹ has drawn attention to a rare class of cases in which early pregnancy simulates this disorder very closely.

¹ St. Louis Med. and Surg. Journal.

Consequences of Cellulitis.—The remote results of this affection are so grave, that even if there were no dangers immediately connected with it, they would stamp its occurrence as a great disaster. The ovaries are at times destroyed by suppurative action; at others they undergo an atrophy, the result of inflammation, and the Fallopian tubes are often left impervious. The uterus is often permanently displaced in consequence of strong adhesions which bind it in a bad position. From this results the fact that, although the disease be cured, the patient is often left incapacitated for some of the most important physiological functions. Sterility, amenorrhœa, dysmenorrhœa, menorrhagia, tubal dropsy,¹ and displacement may remain to attest the gravity of the original disease, and continue for an unlimited time a source of suffering for the patient and discouragement for the physician.

Treatment.—Should the practitioner be called in the acute stage of cellulitis, the patient should be at once completely quieted by opium. If pain be violent, the hypodermic method should be employed in its administration; if not, it should be given by mouth or rectum. This drug throughout the acute stage of the affection should be steadily kept up. It accomplishes these results: it relieves pain, diminishes the severity of the inflammatory process, keeps the bowels constipated, produces sleep, and creates general nervous quietude. If when first seen the patient be suffering very severely, ten drops of Magendie's solution of morphia may be injected by the hypodermic syringe into the cellular tissue of the arm.

Absolute rest should be enjoined, the patient not being allowed to sit up in bed for a moment, upon any pretext whatever. Were I limited to one remedial resource in this affection, I should choose rest in preference to all others, but to accomplish anything it must be absolutely enforced.

The diet of the patient should be mild and unstimulating, consisting of milk with farinaceous substances, and tea or coffee.

If the case be seen very early, before the stage of effusion has occurred, a bladder of crushed ice should be laid over the hypogastrium in the hope of arresting the advance of the disease. But if the disease has advanced beyond the point where this seems possible, warm poultices of powdered linseed should be applied every third or fourth hour over the hypogastrium, the bowels be kept constipated, and febrile action, should it exist, be quieted by refrigerants and direct sedatives, as tincture of veratrum viride, tincture of aconite, or tincture of gelsemium.

As soon as the acute symptoms have passed, and vaginal touch informs us that the effused material is becoming thoroughly organized, a further effort should be made to break up the morbid train before it passes on to suppuration or into chronic induration, by the application of a blister, six by eight inches, over the hypogastrium. This should not be applied be-

¹ Aran, op. cit., p. 638.

fore febrile action and the most acute symptoms have disappeared. Some excellent authorities, among others Sir James Simpson, object to blistering for fear of strangury resulting. I have never had to do otherwise than congratulate myself on its employment. Should the case tend to an acute course, and suppuration be impending, this should be encouraged by constant poulticing.

As soon as the acuteness of the attack has passed, until which time attention should be turned to quieting the general symptoms of inflammation, it is advised by the best authorities that the iodide or bromide of potassium should be administered, the former in five-grain doses repeated every third or fourth hour, or the latter in doses of ten, fifteen, or even twenty grains, at the same intervals. At the same time that I am not prepared to deny the utility of these drugs, I confess that I have never been able to persuade myself that they really accomplish any good result.

There is no more certain method of disgorging the veins of the pelvis and lower bowel than by acting upon the liver, which governs the outlet of the portal system, with which they are connected, and this can most readily be done by mercurial cathartics. Thus occasionally used, the mercurials prove of great benefit in relieving congestion, which is a leading element of the disease. But in doing this we are not developing the specific action of these medicines, which here act as a subordinate, and not the chief element of treatment. The production of ptyalism should be avoided, since it is by no means certain that it is of any benefit, and by impoverishing the blood at the commencement of what may become an exhausting disease it may do absolute injury. As the acuteness of the affection subsides the bowels should be kept free by laxative medicines, and the occasional use of a mercurial in this capacity is indicated. It may be necessary to repeat the application of the blister before the case ends in suppuration or passes into the chronic stage.

While the patient remains in bed, warm poultices, or towels wrung out of warm water and covered by oil silk, should be worn over the hypogastrium. An additional emollient remedy of great value is the persevering use of the warm douche for fifteen or twenty minutes, night and morning, after Emmet's method, already described. The fluid used should be as warm as the patient can bear it, and may be slightly medicated in the later stages by the addition of chloride of sodium, tincture of iodine, or iodide of potassium. The injections stimulate the absorbents, and, at the same time, quiet inflammatory action, in the performance of which functions they are invaluable in these cases.

As the third stage of the disease, or the stage of suppuration, merges into pelvic abscess, it will be best to postpone the consideration of its management to the chapter in which that subject is treated. I will merely state here that after an abscess has formed and evacuated itself, great care

should be taken not to allow the patient to exert herself for several weeks, for fear of a relapse, and even after she has left the house and begun to exercise regularly, during two or three menstrual periods she should confine herself to bed.

CHAPTER XXXI.

PELVIC PERITONITIS.

Definition.—Inflammation involving the peritoneum covering the female pelvic viscera, and limited to it, receives the name of pelvic peritonitis. It must not be supposed that by this definition is meant simply that form of peritoneal inflammation arising in the pelvis and spreading into general peritonitis, which has long been described as metro-peritonitis. The disease that we are now considering is one usually strictly limited to the pelvis, presenting symptoms peculiar to itself, and rarely passing into the general form of the same disorder.

History.—Long before pelvic cellulitis was known, peritonitis, limited to the serous covering of the pelvic organs, had attracted attention, and its clinical resemblance to cellulitis, as subsequently described, fully noted. Thus Morgagni¹ relates a case in which, thirty days after delivery, the right ovary and tube were adherent to the colon and almost destroyed by an abscess. Nauche, in his work on Diseases of the Uterus, published at Paris in 1816, described inflammation of the uterus as affecting, first, the mucous membrane; second, the parenchyma; and, third, the serous covering. In 1828, Mad. Boivin credited the adhesions resulting from this affection and binding the uterus down with a large number of abortions attributed to other causes; and, in 1833, she described immobility of the uterus, for which she gave as causes, peritonitis, metro-peritonitis, and pelvic abscess. In 1839, Grisolle² distinctly stated, that “there are cases of circumscribed peritonitis which, producing a tumor appreciable to sight and to touch, may lead to the belief in the existence of phlegmon,” *i. e.*, a tumor the result of inflammation of areolar tissue. Lisfranc,³ writing ten years after Boivin and Dugès, copies their description very closely in his article on “Fixité de la Matrice,” without referring to them, and like them attributes it to peritonitis or metro-peritonitis.

Although these facts were known and universally admitted, they

¹ Artic. 22, epist. 46. Nonat, op. cit., p. 234.

² Bernutz and Goupil, op. cit., p. 398.

³ Clin. Med., vol. iii. p. 514.

attracted little notice, and after the description of pelvic cellulitis by Doherty and Marchal de Calvi, pelvic peritonitis was almost entirely lost sight of. This was due to the fact that the enthusiasm created by the description of a long-forgotten affection caused observers to look upon the results of peritonitis as those of cellulitis, and to describe them as such. Thus the matter rested until 1857, when M. Bernutz, in a treatise written in concert with M. Goupil, not only drew especial notice to it, but took the position that inflammation of the cellular tissue immediately around the uterus, described by Nonat as "phlegmon périutérin," or what would strictly be termed, in our nomenclature, "periuterine cellulitis," did not exist as a pathological reality, but that the lesions ascribed to it were absolutely due to pelvic peritonitis.

These views, published at first in the "Archiv. Gén. de Méd.,"¹ are fully elaborated in the admirable work² of these observers more recently brought forth. They do not touch the general subject of periuterine cellulitis as it exists in the broad ligaments, subperitoneal tissue, and around the rectum, but only that variety supposed to have its seat in the arcolar tissue between the uterus and peritoneum.

It has been already stated that M. Bernutz was incited to his investigations by certain views advanced by M. Nonat as to the pathology of periuterine induration, which sometimes goes on to suppuration. But his researches served not merely to settle this comparatively unimportant point, they proved the fact, for which the investigator appears to have been himself entirely unprepared in the beginning, that many of those cases regarded as instances of non-puerperal cellulitis are in reality not phlegmonous but peritoneal inflammations. Since the publication of these views I have directed my attention particularly to this point, and from careful observation, both clinical and post-mortem, feel warranted in recording the conclusions at which I have arrived in the following propositions:—

1st. Periuterine cellulitis is rare in the non-parous woman, while pelvic peritonitis is exceedingly common;

2d. A very large proportion of the cases now regarded as instances of cellulitis are really those of pelvic peritonitis;

3d. The two affections are entirely distinct from each other, and should not be confounded simply because they often complicate each other. They may be compared to serous and parenchymatous inflammation of the lungs, —pleurisy and pneumonia. Like them they are separate and distinct, like them affect different kinds of structure, and like them generally complicate each other.

4th. They may usually be differentiated from each other, and *a neglect*

¹ Archiv. Gén., 1857.

² Clin. Méd. des Femmes, 1862.

of the effort at such thorough diagnosis is as reprehensible as a similar want of care in determining between pericarditis and endocarditis.

M. Bernutz cites the results of five autopsies¹ by himself, and between twenty and thirty by others which presented all the signs of pelvic peritonitis and none of cellulitis, although during life the symptoms and signs generally attributed to the latter disease were present. As an example conveying some idea of the close clinical resemblance between his cases found in autopsy to be peritonitis and those ordinarily regarded as cellulitis, I quote the salient points in his sixth observation.

Patient 33, lymphatic temperament, entered hospital November 24th for feebleness, pain in the back, emaciation, and dysmenorrhœa. After a while loss of appetite, increase of pain, and chills appeared. By touch the uterus was found completely fixed, low down in the pelvis and inclined to the right side, and attached to it a very sensitive tumor the size of a hen's egg, extending behind the womb. On the 15th of December this tumor was as large as a turkey's egg. February 1st: tumor only the size of a pigeon's egg; a circumscribed tumor on the left attached to uterus and to the walls of the pelvis. March 23d, uterus movable and tumor reduced to the size of a little nut. April 4th, she died; and autopsy showed tubercular pelvic peritonitis, evidenced by tubercular deposit, lymph, pus, firm old adhesions, ovaries imbedded in false membrane and nearly destroyed.

I had often been struck by the great similarity between peritonitis and many of the cases of what, until enlightened by M. Bernutz, I had regarded as cellulitis, and by the fact that they occasionally ran into general peritonitis without any apparent emptying of purulent collections into the peritoneal sac, but I never had an opportunity of examining such a case post mortem until the following presented itself:—

Mrs. M., aged 35, married, but never pregnant, had been under my care, during the winter, at the Woman's Hospital, for antelexion of the uterus, the result, as I supposed, of periuterine cellulitis. August 6th, I was called to see her in consultation with Dr. Roth, her family physician, and found her suffering from severe pelvic pain, constant vomiting, and fever. Upon vaginal touch I found the uterus immovably fixed and the pelvic roof as hard as a board. The pelvic tissue was everywhere hard and resisting, and the physical signs of what I had habitually styled cellulitis were present. About a week afterwards the patient died suddenly and unexpectedly, and I made an autopsy in presence of Drs. Roth and J. C. Smith. No general peritonitis existed: the left ovary presented a sac the size of a hen's egg, filled with pus; the pelvic peritoneum was intensely inflamed and the uterus bound down by old false membranes, bands of

¹ I have rejected a number of the cases reported, because not sufficiently conclusive.

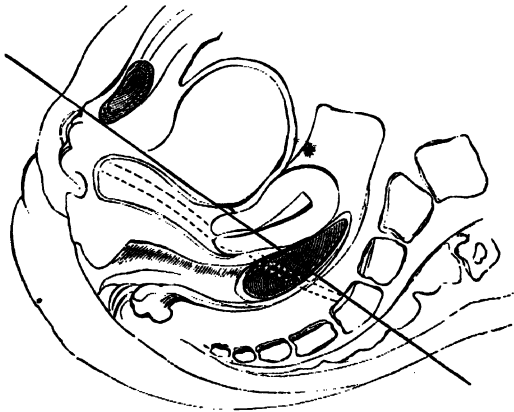
which matted all the parts together. The vermiform appendage was bound to the right ovary and the caput coli lay just below the uterus. No trace of inflammation could be discovered in the pelvic cellular tissue except, of course, that in immediate contact with the ovary.

The fixation of the uterus, observed during life, was due to lymph effused upon the pelvic peritoneum, and no trace of inflammatory action in the pelvic areolar tissue could be discovered as accounting for it. It is true that the left ovary, enveloped by the layers of the broad ligament, was inflamed, and that a certain amount of inflammation existed in the cellular tissue immediately surrounding it, but this did not extend.

Frequency.—A reference to the autopsic notes of cases of cellulitis, for example those recorded by West, Nonat, Aran, and McClintock, will give abundant evidence of the almost universal attendance of this complication upon it. But, even without the existence of that disease, Aran found it in greater or less degree in fifty-five per cent. of cadavers of women examined in his service. This proves that peritonitis, limited to the pelvic viscera, is a common affection, and one which is very generally overlooked. It is probably to its occurrence that are due so many of those attacks of violent hypogastric pain occurring with menstruation, or just after it, accompanied by vomiting and slight febrile action, and which are generally treated by domestic remedies and viewed as cramps or uterine colic.

Pathology.—The disease runs its course here, as peritoneal inflammation does elsewhere, in three stages. In the first there are simple engorgement and turgescence of the vessels, producing redness, dryness, and pain.

FIG. 208.



The straight line represents approximately the roof of the pelvis ;
the dotted line represents it more exactly.

In the second stage an entirely different state of things will be found to exist, to comprehend which fully, the reader must bear in mind what is meant by the "roof of the pelvis." If a plane be passed backwards from

a point just under the pubic arch, through the cervix uteri at the attachment of the vagina, to the sacrum at the attachment of the utero-sacral ligaments, it will correctly represent this roof, which is thus formed by the vesico-vaginal septum, the lower extremity of the uterus, which projects, as it were, through a hole in the roof, the upper part of the fornix vaginae, and the utero-sacral ligaments. Above the plane, the organs of reproduction float, as Nonat expresses it, "in an atmosphere of cellular tissue." Let the reader suppose that instead of this yielding, springy tissue, these organs were fixed in their places by having a fluid mixture of plaster of Paris poured around, among, and over them, which had afterwards become solid, and he may form a correct idea of what vaginal exploration will yield to the sense of touch in the second stage. The roof of the pelvis is hard, ligneous, and as if composed of a "deal board," to which Prof. Doherty likens it. The uterus, which is generally much displaced, is immovable, and all its appendages appear fixed by some solid surrounding element.

This, the second, stage consists in a collection of plastic lymph on the surface of the peritoneum, and of serous, purulent, or sero-purulent fluid in its most dependent parts.

In the third stage the fluid, if serous, is absorbed; if purulent, discharged, and the exuded lymph undergoes organization and subsequently contraction. This binds the uterus, its appendages, and some of the intestines together in a mass, which yields all the physical signs of a tumor.

Causes.—Its causes are the following:—

- Periuterine cellulitis;
- Parturition or abortion;
- Gonorrhœa;
- Endometritis, ovaritis, or salpingitis;
- Escape of fluids into the peritoneum;
- Traumatic influences;
- Imprudence during menstruation;
- Tuberculous or cancerous deposit;
- Uterine displacement.

Its frequent dependence on the first needs no further mention.

As a result of parturition or abortion, it is so well known as to make the exhibition of proof here almost unnecessary. Reference may be made, however, to 53 autopsies by Aran,¹ in which, out of 38 women who had borne children, 24 presented evidences of its previous existence, while out of 15 who were nulliparous, only 5 did so.

Gonorrhœa, by passing into the uterus and through the Fallopian tubes, is a fruitful source of the affection. According to M. Bernutz, 28 out of 99 of his cases had this origin. I have seen a number of severe cases due

¹ Op. cit., 718.

to it, and the great importance attached to this cause by Noeggerath is elsewhere fully stated.

It would be strange if ovaritis and endometritis did not, at times, cause pelvic peritonitis. That they frequently do so, is abundantly demonstrated by autopsies made after their existence both in the puerperal and non-puerperal states.

Salpingitis causes it not only by the extension of inflammation along the mucous, into the serous membrane which is continuous with it, but by emptying its accumulated pus into the peritoneal cavity.

Escape of fluid into the peritoneum is an undisputed cause of this, as of general peritonitis. I myself produced a well-marked case, which almost terminated fatally, by injecting a solution of persulphate of iron into the uterine cavity. The passage of the fluid through the tubes could not be questioned, for agonizing pain came on in less than three minutes, and continued up to the development of inflammation. This danger has caused the almost entire abandonment of intra-uterine injections on the part of the majority of practitioners, unless the cervix be previously dilated by tents. But many other sources from which fluid may enter the peritoneum exist; as, for example, rupture of an ovarian cyst, discharge of tubal dropsy, or of a pelvic abscess, intra-peritoneal hemorrhage, regurgitation of obstructed menstrual blood, etc.

Traumatic agencies, as blows, falls, injury during labor, punctures, etc., may result in partial, as they do in general, inflammation of the peritoneum.

During the performance of menstruation, a physiological function which involves ovarian rupture and produces hemorrhage, which must pass to the uterus by a narrow tube not permanently in immediate contact with the ovary, any degree of exposure must evidently tend to inflammation in the investing peritoneum. Of M. Bernutz's 99 cases, 20 were thus produced.

Tubercles deposited in the part, either on the peritoneum or in the tissue of the tubes or uterus, may, as they do elsewhere, result in secondary inflammation; and cancerous or canceroid degeneration would be still more likely to produce the same result.

In certain peculiar states of the system this affection is excited by the most trivial circumstances, and very commonly the physician is held to a severe account for the fatal issue of an affection which he as little expected to arise from his interference as the friends of the patient did. I have seen it excited by the passage of the uterine sound, the use of a small sponge tent, and, in one case, from the passage of water, used by vaginal injection, into the uterus. Dr. Barnes, in his late excellent work on the "Diseases of Women," says, "I have seen fatal peritonitis follow the simple application of nitrate of silver to the cervix uteri." It should be the duty of every physician to shield an unfortunate brother practitioner

by the protection which these facts legitimately afford him; but it should equally be the duty of each to remember this paragraph, the whole of which is italicized in Dr. Savage's work upon the Female Sexual Organs—"No surgical proceeding whatever, touching any part of the uterine system, should be unattended by the precautions observed in operations of a grave character there or elsewhere; in certain states of the general system, unforeshadowed by any recognizable peculiarity, the most trivial operation has been speedily followed by fatal peritonitis."

Varieties.—This affection may assume either an acute or chronic form, though when it constitutes the principal disease it generally, in the beginning, presents the features of the former. When it occurs as a complication of tuberculosis or uterine disease, it often assumes from the beginning the chronic type. Besides these varieties there are two others which cannot be passed without notice—menstrual pelvic peritonitis which becomes aggravated at periods of ovulation, and recurrent peritonitis which lasts for many years, giving, however, immunity for long periods, and then recurring with great violence from a trivial cause. I have had several such cases, one of which lasted ten and another eight years. For eight, ten, or twelve months these patients enjoy an almost absolute immunity from the disorder: then, excited by some apparently insignificant cause, a severe and excessively painful attack comes on. Sometimes these attacks are complicated by cellulitis, and a purulent accumulation frequently discharges itself through the pelvis as a consequence of them.

Symptoms.—The acute form shows itself by—

- Pelvic pain and tenderness;
- Sometimes great vesical irritation;
- Usually increased thermometric range;
- Nausea and vomiting;
- Anxious facies;
- Mental disturbance;
- Tympanites.

When a severe acute attack sets in, it may cause either a chill, or a sensation of coldness so slight that the patient will not recall its occurrence unless her attention be especially directed to it; or pain and fever may show themselves without this symptom.

Pain is at times only moderate, but at others most severe. It may occur in paroxysms, which create the greatest agony and prostrate the patient by their severity. I have seen it amount to agony equal to that arising from the passage of a biliary calculus, causing the patient to roll in bed, seize the bedclothes in the teeth, and cry aloud most piteously. As a rule, it is not so violent as this. Pain may show itself quite early in the disease, or may be preceded for several days by pelvic uneasiness and weight.

Tenderness over the whole hypogastrium accompanies it to such a de-

gree, that even the weight of the bedclothes is intolerable, and the patient, to relieve it, lies upon the back with the legs flexed in order to relax the abdominal muscles.

The pulse shows in slight cases very little, and in severe cases a considerable amount of febrile action. It is small and wiry, and increases in rapidity to 110 or 120 to the minute.

The thermometric range is likewise variable. In the beginning of an attack, which may become a severe one, the range may be normal, or even below the normal standard. "Sub-normal temperatures are especially common in peritonitis," says Wunderlich, "and always suspicious; death may follow them closely. High and rising temperatures do not add, *per se*, arguments for an unfavorable termination, although adding another dangerous element to the case. It is not so much the actual height, as its constancy, which must be feared; as are, also, great and irregular fluctuations between very high and very low temperatures." When, however, a case commences with a temperature of 106° , it is greatly to be feared that it will run a violent and dangerous course. On the other hand, even a normal temperature should not give complete security, although a decidedly favorable augury may usually be drawn from it. In general terms it may be said that for him who implicitly trusts to the revelations of the thermometer in this affection, it will prove an unreliable guide; but to him who looks upon them merely as aids to diagnosis and prognosis, it will give decided assistance.

Nausea and vomiting are common symptoms, though they do not generally exist to such a degree as to prove very annoying.

The facies is peculiarly anxious, and is sometimes rendered very striking by the appearance of dark circles around the eyes.

I have generally noticed in acute cases that the mind is markedly disturbed, as if the patient instinctively dreaded some serious disease, and even in chronic cases there is a decided tendency to slight mental alienation. In several cases I have seen this advance to absolute insanity.

It may be justly observed that these are the symptoms which mark general peritonitis. This is true; it is merely the slighter degree of severity and the localization of pain and tenderness, which will point to the partial nature of the affection.

With reference to general peritonitis, it may be stated that, on the one hand, it, of all diseases, may declare itself by the most numerous and characteristic symptoms, or, on the other, run its fearful course with the greatest obscurity, so as to mislead the most careful diagnostician, even up to its latest stages. If this be true as to the general disorder, how much more must it be so as to the local. Thus it is that we find the subacute and chronic forms passing off without recognition, and the fact that they have existed is known only by the discovery of firm adhesions over the

whole pelvic roof in post-mortem examinations. In these varieties, there is less pain and tenderness and less tendency to nausea and febrile action than in the acute. Sometimes, indeed, there is merely a sense of local discomfort, increasing to pain at menstrual periods, accompanied by fever towards evening, by difficulty in locomotion, and by a general sense of feebleness and malaise. This remarkable absence of symptoms in pelvic peritonitis was announced by Aran, and Dr. Duncan¹ expresses himself upon it in these words: "I might adduce cases of gonorrhœal ovaritis commencing in healthy young girls, and ending in the fusion of all the parts in the pelvis into a solid, immovable mass, without the patient losing a cheerful, and even gay visage, or making any great complaint of pain, unless interrogated closely, and then alleging the chief suffering to be from irritable bladder."

Physical Signs.—Should an examination be made during the first stage, nothing will be ascertained but the existence of sensitiveness upon pressure in the vaginal cul-de-sac and upon lifting the uterus. Tenderness will likewise be demonstrated by pressure on the hypogastrium. None of that doughy, œdematous, puffy feel which accompanies cellulitis will be discovered by vaginal touch. Should the disease run its course as one of those very insignificant attacks, which produce no grave symptoms and are scarcely recognizable, no other physical signs will present themselves at this or any other period. Should it be one of graver character, a sense of resistance merely, or a tumefaction like an ill-defined tumor, may be felt in the recto-vaginal space or at the side of the uterus. Or if very little lymph and much sero-pus have been the result of the inflammatory action, a sense of fluctuation may be detected very early. The uterus is always more or less interfered with in its mobility, and in severe cases it is absolutely fixed. This explains how Lisfranc and Boivin applied to it the name of "fixity" or "immobility" of the uterus.

I have stated that a tumor is commonly felt posterior to, or at one side of the uterus. This tumor, which is formed by agglutination of the pelvic and abdominal viscera, is extremely sensitive to touch.

If the disease go on to formation of pus, the sense of tumefaction may disappear as this discharges itself; but if the effused lymph become thoroughly organized, it remains hard and resisting for a length of time. This accumulation almost invariably displaces the uterus, sometimes by pressing it in an opposite direction, sometimes by drawing it towards itself as the lymph contracts.

In a case which I saw some years ago with the late Prof. G. T. Elliot, we were much puzzled for a short time before its fatal issue, by the existence in the fornix vaginæ of a pouch, apparently filled with fluid, all the

¹ "Perimetritis and Parametritis," p. 78.

surrounding parts being unattached and no sense of tumefaction or resistance being discoverable. The patient died suddenly from general peritonitis, and upon post-mortem examination, conducted by Prof. J. W. S. Gouley, we found, first, a small piece of fetid placenta in utero, the result of a recent abortion; second, an abscess of the right ovary, which had created general peritonitis by emptying itself into the peritoneum; and, third, pelvic peritonitis, which had evidently existed for more than a week. It had created a purulent collection in Douglas's cul-de-sac, which was limited to this space by false membranes, that formed for it a complete roof. This accumulation it was which gave the sensation above described.

In another case, sent to me by Prof. J. C. Hutchinson, of Brooklyn, the uterus was found firmly bound to the sacrum by a hard, resisting mass, which was very sensitive. There was considerable corporeal endometritis, and I incautiously applied to the uterine cavity tincture of iodine, and as a result the most violent pelvic peritonitis developed itself, which almost became general. In ten days after its inception, a soft, fluctuating pouch formed in the fornix vaginae, which became so painful that I tapped it with an exploring needle and drew off about an ounce of clear serum, much to the patient's relief.

Course, Duration, and Termination.—In no disease can these be more variable and uncertain than in that under consideration. A great similarity exists between its phases and those of pleuritis. As in that affection we have shades of difference, varying from the ordinary "stitch in the side," which results from inflammation of a portion of the pleura not larger perhaps than a silver half dollar, to empyema and tubercular pleuritis, which may continue till death by pulmonary consumption or pneumothorax closes the scene, so may we have in pelvic peritonitis like variations. It may run its course unobserved, leaving evidence of its existence only in adhesions found post mortem. It may pass through its first two stages in three or four weeks, leaving the uterus permanently displaced by the continuance of the third. It may reappear with a certain amount of acuteness at menstrual periods, causing them to be very painful. It may, if due to tubercular deposit, continue so as to exhaust the patient slowly. It may produce a purulent collection, which, by emptying itself into the peritoneum through the adhesions thrown around it, may create general peritonitis, or this last may result from the spread of morbid action from the pelvic to the general serous membrane.

Differentiation.—The diseases with which this is most likely to be confounded are—

Periuterine cellulitis;
 Pelvic hemothecle;
 Fibrous tumors;
 Fecal impaction.

Periuterine Cellulitis.—Differentiation between these two affections is in some cases simple enough, but in others it is impossible. Difficulty will occur when cellulitis affects, and is confined to, the tissue most immediate to the uterus, but this we know to be very rare. Our suspicions will often be turned into the proper channel by the cause of the attack. Cellulitis will very rarely occur except after parturition, abortion, or an operation on the pelvic viscera. Peritonitis will usually result from exposure during menstruation, disease of the ovaries, or escape of fluid into the peritoneum. Should the attack occur as a result of gonorrhœa, it is probably due to serous and not cellular inflammation, a fact which the anatomical relations would lead us *à priori* to anticipate, and which is fully substantiated by statistics. West and Aran credit gonorrhœa with the causation of cellulitis in from one to two cases in a hundred, and Bernutz declares it active in twenty-eight out of a hundred of peritonitis.

Pelvic Hematocoele.—From this it may be distinguished by the great suddenness of appearance of hematocoele, absence of signs of inflammation in the beginning, presence of those of hemorrhage, and by the much greater dimensions of the tumor, which, unlike that of peritonitis, is at first rather soft and gradually becomes hard. The occurrence of free bloody flow will likewise point to hematocoele, though such an occurrence, to a limited extent, often takes place in peritonitis. Hematocoele often excites peritonitis, and thus both frequently exist together.

Fibrous Tumors.—These will generally be known by their producing no pain, presenting no sensitiveness on pressure, no sense of œdema, no signs of inflammation nor rapidity of development. They are likewise usually movable, and cause no fixation of the uterus.

Fæcal Impaction.—After pelvic peritonitis and cellulitis have existed for some time, and have lost their features of acuteness, and more especially after opium has been long used to allay the pain which attends them, they are very apt to be complicated by fæcal impaction. Not only is this a complication, I have known it exist long after the inflammatory affection which preceded it has passed away, and give rise to the belief that this still continues, the pain which it creates being attributed to the primary condition. I have met with several very striking cases in which, after four or five months of intense suffering from supposed periuterine inflammation, which was treated by free use of opium, I discovered great fæcal impaction, the removal of which afforded complete and permanent relief. So frequent do I consider the development of this condition as a result and complication of periuterine inflammation, or as an independent state which is mistaken for it, that I never take charge of a case which has been under the previous treatment of others without examining for its existence, and in the management of cases from the commencement under my charge, always carefully guard against its occurrence.

Importance of differentiating Peritonitis from Cellulitis.—The importance of differentiating this disease from cellulitis rests in part upon the fact that it admits of less local interference. Sometimes the passage of a uterine sound, an application to the cavity, or even the use of a vaginal injection which by accident has entered the uterus, has been known to destroy life by causing peritonitis which has extended to the whole peritoneum. It is likewise important in reference to prognosis as to the course of the affection and its remote results. Lastly, it should not be forgotten that progress in the comprehension of the diseases of all organs must be preceded by a careful and systematic separation of them, one from the other. As the study of acute cardiac affections under the common name of carditis could never have accomplished what that of each of its varieties has done, so could not investigation of these affections, undivided into their proper classes.

Prognosis.—If the case follow parturition or abortion, the prognosis will be rendered graver by that fact. Otherwise it will be governed in great degree by the general symptoms. Should these show great intensity of inflammation, and constitutional disturbance be evidenced by excessive nausea and vomiting, quick pulse, anxious facies, etc.; in other words, should the symptoms point to the probable spread of the disease over the whole serous sac, the ordinary prognosis of peritonitis may be made. In cases of chronic type, occurring in the non-puerperal state, it is decidedly favorable, unless the disease exist in a scrofulous or tuberculous patient, or show a tendency to severe periodical relapses. Another fact, which will increase the gravity of prognosis, is the existence of purulent effusion in place of lymph and serum as the result of the inflammatory action.

Results.—The common results of the disease, which remain long after it has passed away, or perhaps permanently, are injury of the ovaries by abscess or atrophy; obliteration or dropsy of the tubes of Fallopius; and fixation of the womb in malposition, by organization of false membranes. As consequences of these lesions follow very naturally, amenorrhœa, dysmenorrhœa, and sterility.

Treatment.—Pelvic peritonitis usually announces its advent by severe pain, elevation of temperature, rapidity of pulse, and other symptoms which leave the practitioner in no doubt as to its development. The rule of treatment should be based upon the following indications: first, entire prevention of pain during its course; second, complete control of the temperature; third, the strict observance of absolute quietude. The patient's prospect for life and for escape from the chronic results of the disease, if recovery occurs, will greatly depend upon the thoroughness with which these indications are fulfilled.

In the very commencement of the attack pain should be relieved by opium administered by the hypodermic syringe, the mouth, or the rectum. The first method is an excellent one to begin with, but its frequent use is

so apt to engender a morbid taste that it is better after pain has once been completely subdued to continue the narcotic influence by opium or morphia by mouth or rectum. But opium should be regarded not only as a means of relieving pain, it aids in fulfilling also the indication of preserving perfect quietude, and limiting inflammatory action by its influence on the nervous system. The sovereign remedy for peritonitis is opium, not in small, but in large and repeated doses, carried to the point of producing the quietude which is necessary for the favorable progress of the case. Sometimes this condition will be produced by one grain of opium, in powder, or quarter of a grain of sulphate of morphia every two or three hours, but in many cases half a grain of sulphate of morphia will be repeated every two or three hours for a long time before perfect ease is obtained. The inexperienced employer of this drug in these doses will fear dangerous narcotism, but in New York, under the tuition of Alonzo Clark, to whom we are indebted for this practice, we employ it with the greatest confidence. Let the physician avoid all other drugs and give opium thus freely in one or two cases of this affection, and he will appreciate its value.

In a certain number of diseases death is in great degree due to the very high temperature which attends them. Examples of such are sunstroke, typhoid fever, septicæmia, and peritonitis. In all these, the greatest advantage results from keeping the temperature at or near the normal standard. This being done the altered blood state, and its remote influences upon the tissues, composing the nervous system and important viscera, which result from an exaltation of the animal heat, are avoided, and thus, although death may come through some other avenue of approach, this one is obstructed. The best method of controlling high temperature is cutaneous refrigeration by Kibbee's plan, which is described under the after-treatment of ovariectomy, to which the reader is referred for details of its practice.

Perfect quietude should be observed. Not an approximation to it, but a stillness which should interdict the action of every voluntary muscle. A nurse should watch the patient night and day, anticipate every want, and supervise every function. The patient should not converse with her, and no one else should be habitually in the chamber. The bowels will be quieted by the opium employed. No cathartic medicine should be given, as it interferes with quietude, and it is well to keep the bladder empty by the catheter, if urination is not easy. Milk, beef-tea, and other plain, nutritious, and unstimulating food should be prescribed, but no solid food should be allowed. Should the pulse be strong, rapid, and resisting, the tincture of *veratrum viride* should be given in doses of five drops, in water, every four hours, until the specific action of the drug is developed.

In the second and third stages, where lymph has been the chief and perhaps the only product of inflammation, we must rely upon counter-irritants, and I know of none to be compared with the blister. One made of

Spanish flies, four by six inches in dimensions, should be applied over the hypogastrium and the abrasion which it produces dressed with savine ointment. As soon as it heals entirely, another should be applied directly over the newly-formed skin, and this may be repeated every ten or fourteen days with great advantage. I have known patients who dreaded them in the beginning beg for them after experiencing the relief which they gave. The blister is to pelvic peritonitis in its later stages what it is to pleuritis, the most rapid and efficient of remedial agencies.

Another very excellent method for producing counter-irritation is by tincture of iodine painted over the hypogastrium once in twenty-four hours for weeks.

Treatment of Chronic Cases.—The affection having passed into the chronic stage, or originated with all the appearances of chronic disease, a different course of management becomes advisable. The patient should not be so strictly confined to bed nor dieted. She has entered upon an invalid course which may last for months or for years, and in making a strenuous effort to cure her local disorder we may sap her general health and do her irretrievable injury. On the other hand, she should not attend to her household cares, nor take exercise to any great degree; but remaining in bed or on a lounge most of the time, go out in the fresh air for an hour or two daily. Her diet should be of the most nutritious character, stimulants should be allowed in moderation, and the impoverished blood resulting from a combination of circumstances prejudicial to hematosis, combated by change of air and the use of vegetable and mineral tonics, especially iron.

One of the most important questions in the management of chronic cases is that of the amount of exercise to be allowed, and the strictness of confinement to be practised. No absolute rule can be laid down in reference to these points, for each case will call for special guidance, based upon careful experiment. In general terms it may be stated that when motion does not produce pain or discomfort, the patient should ride in an easy carriage for two or three hours daily. In those cases which are still more free from local trouble, she may walk with moderation; while in others which present elements of acuteness, no motion whatever should be allowed. Sometimes the patient will even bear removal from home to the sea-side or some watering-place during the summer. If this be so, a locality should be chosen that is accessible by easy travel. One great and ever recurring difficulty in this connection arises from the great tendency of patients, allowed to take exercise, to commit indiscretions by overtaxing themselves. This becomes so great at times, as to make it advisable to confine to bed one who would be benefited by moderate exercise, in order to avoid danger from her imprudence. The fact should never be lost sight of that the pelvic peritoneum forms a part, a sheath, as it were, of the suspensory ligaments of the uterus. The fibrous structure of the round,

broad, sacral, and vesical ligaments is covered by it, so that dragging of the uterus upon them puts the peritoneum upon the stretch and strongly tends to excite renewed action there.

Of all influences which act in a directly prejudicial manner upon these cases, sexual intercourse is the most decided, and its strict limitation should be made one of the first rules laid down for their management.

Should acute exacerbations occur in chronic cases, the use of local depletion is advised by high authority; but, as a plan to be strictly pursued with reference to cure, it is highly objectionable on account of the spanæmia which it induces.

If it be deemed advisable to keep up the use of the iodide or bromide of potassium, the results of which are, however, doubtful, they may, with advantage, be combined with iron and vegetable tonics, as in the following prescriptions:—

R. Potassii iodidi, ℥ij.
Ferri iodidi syr. ℥ij.
Tr. calombæ, ℥vj.—M.

A dessertspoonful (℥ij) in water three times a day.

R. Potassii bromidi, ℥v.
Vini ferri dulcis, ℥iv.
Tr. calombæ, ℥iv.—M.

A dessertspoonful in water three times a day.

Should collections of pus or serum be evacuated? The important bearings of this question are manifest, but unfortunately no definite answer can be given to it. In evacuating these collections the peritoneal cavity is not exposed to entrance of air, for a false, membranous roof covers the collection, but there is always danger in perforating the delicate and easily inflamed serous sac. I have elsewhere reported a case in which I drew off one or two ounces of serum under these circumstances, to the great relief of the patient, who rapidly improved and did well. It is not the only case in which I have ventured to invade the peritoneum under these circumstances. The safest rule for practice will be this: if in spite of the sero-purulent collection the patient be doing well and do not suffer from the local trouble, it should be left to empty itself spontaneously. If, on the other hand, the patient suffer from the collection, be not progressing favorably, and the evacuation be perfectly practicable, it should be accomplished.

Methods of Evacuation.—Evacuation may be accomplished by the aspirator, a small trocar and canula, or by a guarded bistoury or tenotomy knife. After evacuation the sac may be carefully washed out with a weak solution of carbolic acid in warm water, or of tr. of iodine in the same menstruum.

CHAPTER XXXII.

PELVIC ABSCESS.

SURPRISE may be felt at the appropriation of a special chapter to this subject. The opinions of several reviewers have already been expressed to this effect, and the propriety of making it an addendum to that on cellulitis or peritonitis has been suggested. How could this, however, with propriety be done, when pelvic abscess arises from other than those inflammatory processes; from ovaritis, perirectitis, psoas disease, disease of the pelvic bones, etc.? It appears to me a matter of importance to impress the fact that it should be viewed from a more general standpoint and not be limited to the results of two affections. I know of no surer way of effecting this object than that which I here pursue.

Definition.—Upon this point little need be said, as any purulent collection originating in, and not simply passing through, the pelvis, comes under this head, regardless of its cause.

Pathology.—There are three sources of pelvic abscess: 1st, breaking down of tuberculous material deposited in any of the tissues of the pelvis; 2d, suppurative action taking place in the walls of a cavity formed by an hematocele or ovarian cyst; 3d, inflammatory suppuration in the areolar tissue, the ovaries, the tubes, the pelvic peritoneum, or the parenchyma of the uterus itself. Of all these sources the third is decidedly the most frequently met with, and is most generally the result of cellulitis, occurring after parturition or in the non-puerperal state. Under the latter circumstances cellular inflammation may be primary, or secondary to irritation from some foreign body, as the debris of an extra-uterine fœtus, a hard substance in the vermiform appendix, a fibrous tumor of the uterus, or caries of the pelvic bones.

Causes.—Any influence which induces cellulitis, or either of the other two pathological conditions mentioned, may prove immediately causative of abscess. As remote causes may be mentioned the tuberculous, scrofulous, and syphilitic diathesis; great depression of the vital energies from any cause, as impure air, like that of a hospital; the puerperal state; and pyæmia.

Symptoms.—These will not differ essentially from those of abscess elsewhere. When pus is forming, violent chills, followed by fever, with profuse sweating, are likely to occur. Then a feeling of prostration with throbbing pain in the pelvis, pressure upon the rectum and bladder, and sometimes interference with urination, present themselves. Pain down

the thigh, which may be mistaken for sciatica, will also at times be noticed.

Physical Signs.—By abdominal palpation, combined with rectal or vaginal touch, a fluctuating tumor will be felt, presenting the ordinary physical signs of purulent collections elsewhere.

Course, Duration, and Termination.—Pelvic abscesses may evacuate themselves through any part of the floor of the pelvis, through its roof into the peritoneum, through any one of its walls by means of foramina, through any of the pelvic viscera, or by several of these channels at the same time. They may open by free outlet or by a long, sinuous tract, which renders prognosis as to cure extremely grave. The most favorable points for evacuation are through the vagina and rectum. Next to these comes, in point of favorable prognosis, evacuation through the abdominal walls. Nonat declares that when the collection “opens simultaneously into the intestine and bladder, death is almost inevitable.” In the *Charleston Medical Journal*, for 1853, I published a fatal case of this character with autopsy. Sometimes, when left to themselves, these abscesses will go on to recovery without delay, opening into, and discharging themselves through some of the parts mentioned, and gradually contracting and disappearing. Sometimes, if deprived of the assistance of art, they may burrow deeply into the tissues, open by long, fistulous tracts into some organ, as the large intestine or sigmoid flexure, or discharge into the peritoneum.

König has instituted some very interesting experiments on the cadaver, to show the most probable routes which these accumulations may take:—

1st. Injecting air or water beneath the peritoneum near the ovary or tubes, the injection ran along psoas and iliac muscles into pelvis.

2d. Beneath lateral ligament near cervix, it filled the same side of pelvis, ran along round ligament towards Poupert's ligament, and to the iliac fossa.

3d. Beneath broad ligament behind cervix, it filled posterior and lateral part of pelvis, and passed along psoas and iliac muscles into pelvis.

Sometimes, even when the opening at first is large, it contracts so as to allow only an imperfect discharge of the contents of the sac. Then hectic fever arises, and the patient either leads a miserable existence for years from the constant fetid flow, or is worn out by exhaustion or septicæmia. At other times these collections of pus will remain imprisoned for a long period, without any attempt at escape.

Differentiation.—The morbid states with which this condition may be confounded are these:—

- Pelvic hæmatocele;
- Extra-uterine pregnancy;
- Displaced ovarian cyst;
- Hydrometra;
- Tubal dropsy.

The first of these, being a hemorrhage, gives certain symptoms characteristic of that accident, as prostration, coldness of the surface, suddenness of appearance, etc.; and absence of chill, heat, fever, and other signs which are likely to accompany abscess.

With the second, the signs of pregnancy exist, and as early as the fourth month fetal movements may be detected, while the perfect health of the patient with absence of menstruation will excite suspicion as to the character of the affection.

Around abscesses, even of tubercular character, there is always a wall of lymph thrown up which would not be present in a displaced ovarian cyst. All the rational signs of suppuration would likewise be absent in the latter.

He who confounds the distended body of the womb with abscess would surely be very culpable, for the spherical shape of the body and the light obtainable from the uterine probe should be guides by which to avoid error.

Tubal dropsy is generally the result of inflammatory action affecting the Fallopian tubes and closing both uterine and ovarian extremities, at the same time that it causes a secretion, which distends the intermediate canal. The fluctuating tumor thus resulting, being produced by inflammation, and being often attached, in consequence, to the surrounding parts, would offer difficulties in diagnosis which might well prove insurmountable. If an error were made, however, no evil would result from it.

Prognosis.—The prognosis will depend upon the following circumstances: It will be favorable if the abscess be superficial, point upon a mucous tract, open low down in the pelvis by free exit, and give forth pus which has no offensive odor. Should it be deep-seated, open by a long tract, give forth fetid pus, open high up and by two points of exit, as, for example, the bladder and bowel, the prognosis is decidedly unfavorable, unless the case can be so affected by surgical interference as to change its character.

Treatment.—Nothing can be done in these cases by specific medication, by which I mean that directed especially to relief of the existing morbid condition. All of our efforts should be directed to supporting the vital forces, which are always much prostrated by the process of suppuration. The patient should take the most nutritious diet, as much animal food as she can digest, eggs, milk, fresh vegetables, and malt liquors. Whiskey or brandy should be allowed her, and the blood state should be improved as much as possible by vegetable and mineral tonics. Those most especially suited to the condition are preparations of cinchona, and of iron, as, for instance, the following pill:—

R:—Quiniæ sulphat. $\mathfrak{z}\text{ij}$.

Ferri sulphat. $\mathfrak{z}\text{j}$.

Acid. sulph. arom. gtt. x.

Mucilage acaciæ, q. s.—M. et ft. pil. No. xx.

S.—One to be taken three times a day before meals.

But it is to surgery that we must look most confidently for aid, and in this connection arises the important question as to the propriety of opening such abscesses, the best point for evacuation, and the time for interference.

Should an abscess in the pelvis show a rapid tendency to point and discharge through a favorable channel, at the same time that no distressing or dangerous symptoms show themselves, it would be the part of wisdom to await the action of nature, for all must admit that there are few localities in the body into which it is more hazardous to cut than this. Even under these circumstances, however, there is danger in delay. Sir James Simpson relates a case which he saw with Dr. Zeigler one day when the abscess pointed decidedly towards the vagina and rectum very low down. Feeling sure that it must soon discharge, they left it till the next day, but before that time, to their surprise, it had burst into the peritoneum. This danger, as evidenced by statistics, is not great, and as experience goes to prove that the knife is often employed too early, rather than too late, I should strongly recommend the delay of surgical interference until the presence of pus is an absolute certainty. If it be thus delayed, the tissues intervening between the pus and the point of introduction of the instrument become broken down, and a tract or sinus is avoided; if two or three abscesses exist near each other, we give time for them to coalesce; and the mass of lymph poured out is liquefied by the suppurative process. Should evacuation be resorted to too soon, all these advantages will be lost.

Let us suppose a different case, that the patient is suffering grave constitutional signs from the abscess. The answer to the question of the propriety of interference resolves itself into this: if the pus can be certainly reached, it should be evacuated. Should the abscess be deeply seated, on the other hand, so as to make the operation difficult and uncertain, it would expose the patient to hazards greater than those attendant upon delay.

Dr. Savage believes that "puncture should be practised early and per vaginam." Spencer Wells declares from an experience in opening as many as from twenty to thirty pelvic abscesses that he has known of no fatal result. "I have known," says he, "several cases of death where no puncture has been made—some of them very painful cases—when I had urged puncture and was overruled." As a rule he punctures per vaginam.

Prof. Brickell, of New Orleans, has recently taken strong ground in favor of the early evacuation of pelvic accumulations, and, as I especially desire to lay before the reader an unbiassed view of the present state of professional opinion upon this important subject, I give his conclusions in full:—

"1. I have no doubt at all that there are two distinct forms of pelvic inflammation—serous and phlegmonous, or suppurative. An attack of

either may be abortive—that is, may fail to result in formation of pus or effusion of serum. But, should either pus or serum be deposited, then,

2. I am sure that evacuation is the proper practice; and,

3. Either should be evacuated *per vaginam*.

4. The presence of pus in any portion of the body is not to be tolerated by the surgeon. I contend that the presence of effused serum in the pelvis is not to be tolerated either. As long as it is present, in addition to the pain and prostration present, there is the abiding stimulus to repeated inflammations, and the pelvis can and will be ravaged.

5. Topical applications and internal remedies have no influence on pelvic and serous effusions, according to my observation."

For my part, I feel very sure that this subject is one upon which no fixed rule can be given. The surgeon must weigh the dangers of operation with those of delay, and decide by the indications presenting in each individual case. Were the determination of the existence and locality of purulent accumulation really as easy at the bedside as one might be led to regard it from the literature of the subject, I should strongly advocate a uniform resort to evacuation. But this not being by any means the case, I am induced to do otherwise. Nor must it be imagined that seeking for pus hidden away in the pelvic areolar tissue is an entirely safe procedure. The following fatal case, due in all probability to an entrance of air into the veins, will prove interesting in this connection:—

"In the case reported,¹ aspiration some three months before, for the removal of a quantity of pus from the pelvis, had been followed by much relief. The symptoms having returned, the needle was again introduced through the vagina to the left of the uterus, a distance of three-fourths of an inch. As soon as the pumping was commenced the patient manifested pain, became convulsed, and grew purple. Congestion of all the superficial veins followed, though the needle was immediately withdrawn as soon as the symptoms began, when no more than four or five strokes had been made. In three minutes the patient was comatose, and in ten minutes the heart ceased to pulsate.

"The autopsy revealed a small punctured wound on the left side of the vagina, one and a half inches before its juncture with the uterus. The probe passed upward and to the left three-fourths of an inch in the direction of a soft tumor in the uterus. Around the track followed by the probe was no more than a teaspoonful of clotted blood. A close network of small veins was traversed by the puncture just outside of the vagina, but after the most diligent search it was seen that no important bloodvessel had been touched. The areolar tissue about the uterus contained air. The left lung was much congested. The right chambers of the heart were filled with air, and contained no blood. The left chambers were

¹ Boston Med. and Surg. Journ., vol. cii. No. 17.

empty. The valves were normal. The veins of the stomach were distended with air, presenting the appearance of pale round worms."

The Best Point for Evacuation.—To whatever surface the point of the abscess is nearest, that will, as a general rule, be the best for its evacuation. If there be a choice, the locations at which it will most likely point should be chosen in this order: 1st, the vagina; 2d, the rectum; 3d, the abdominal walls.

Dr. Savage reports the points of opening, artificial or spontaneous, in 19 cases; they were as follows:—

- 1 above pubes at median line.
- 1 midway between navel and pubes.
- 1 outside left saphenous opening.
- 2 by rectum; 1 fatal.
- 1 by rectum and side of anus.
- 1 by colon; 1 fatal.
- 4 by vagina.
- 2 by bladder.
- 1 by iliac region.
- 3 into peritoneum; 3 fatal.
- 1 by rectum and internal abdominal ring.
- 1 by vagina, bladder, rectum, and inguinal region.

It will be seen that out of 19 cases 5 proved fatal—3 by emptying into the peritoneum, and 2 by causing colitis and rectitis.

Methods of Operating.—The propriety of opening the abscess having been determined upon, the operator, if he intend reaching it through the vagina or rectum, should carefully investigate, by touch, as to the presence upon their walls of large bloodvessels, the opening of which might prove a source of serious hemorrhage. The patient being placed on the left side and Sims's speculum introduced, if there exist the slightest doubt as to the contents of the sac the needle of a hypodermic syringe should be plunged into it and the point decided. If this be not done, an ordinary exploring needle should be passed into the tissues until pus is seen to flow along its groove. Then the operator, feeling sure of his ability to reach pus, holds the needle in one hand, while with the other he slides the point of a bistoury along its gutter and passes it to the place of accumulation. This is a method at once safe, certain, and effectual, and I should recommend it in preference to any other except that which comes next to be considered. The aspirator affords an easy and effectual means of emptying these accumulations, and at the same time one that is to a great extent free from danger. After it has removed all the fluid which will flow, its action may be reversed, the sac filled with warm carbolyzed water, and this at once drawn off again. Should reaccumulation take place, the situation and certainty of the purulent collection being established, it may be evacuated by a bistoury. If the opening made be large enough to admit the finger, it should be passed in, and by it any tract leading into

an adjoining abscess should be enlarged, and any sloughing tissue met, removed. After this, should there be any fear of closure of the canal just opened, its walls may be touched by nitrate of silver, or painted with solution of persulphate of iron, or a piece of gum-elastic catheter or rubber tubing may be left in it.

If it be thought best to select the abdominal surface as the point of evacuation, all danger of escape of pus into the peritoneum may be avoided by following the suggestion of Récamier with reference to hepatic cysts, namely, causing adhesions of the layers of the serous membrane by a nitric acid issue over the point of selection. A trocar, the needle of the aspirator, or a bistoury guided by an exploring needle, may be plunged through the centre of the issue without the danger just mentioned.

Means for Causing Closure of the Sac.—Sometimes, after the evacuation of these abscesses, their sacs will not close, but, remaining open for months and even years, go on pouring out large quantities of pus.

The causes of their not closing are these: the existence of sinuses, which will not allow their complete evacuation; a peculiar condition of their walls from the existence of a membrane, called by Delpech pyogenic, which tends to prolong suppuration; or the passage into the sac of air or feces from the intestines, or urine from the bladder.

Of these the first is decidedly the most frequent, and should be met by dilatation of the tract leading to the abscess, by tents of laminaria, or enlargement by the knife.

Should the abscess have a short and free outlet, the sac should be injected two or three times a week with tincture of iodine, at first in solution, afterwards pure; or by solution of carbolic acid.

In case of entrance of feces, air, or urine into the diseased part, a counter-opening should be made which will allow their free escape, and the part kept as clean as possible by injection of tepid water. Then the fecal or urinary fistula allowing the vicarious discharge should be cured by appropriate means.

Before practising any operation for evacuation of pelvic abscesses an anæsthetic should always be administered, as perfect quietude is essential to safety.

CHAPTER XXXIII.

PELVIC HEMATOCELE.

Definition and Synonyms.—Under this and the synonymous titles of retro-uterine hematocele, periuterine hematoma, and bloody tumor of the pelvis, has been described an accumulation of blood in the pelvic cavity either above or below the peritoneum.

History.—Although an attempt has been made to prove that the ancients were cognizant of this affection, the proof of such a fact is not satisfactory. The earliest allusion made to it is contained in the works of Ruysch, of Amsterdam, who wrote in 1737. After this, little attention was paid to it until the time of Récamier, although mention of it was made by Frank, Deneux, and some others.

In 1831, Récamier, under the impression that he was opening an abscess, cut into a tumor behind the uterus and gave exit to a large amount of black, grumous blood, and about ten years afterwards Bourdon, one of his pupils, published another case occurring in his practice.

A tabular view of the names of those who have been chiefly instrumental in elucidating the subject and sytematizing our knowledge upon it is here presented :—

- Récamier, 1831, "Lancette Française ;"
- Velpeau, 1843, "Recherches sur les Cavités Closes ;"
- Bernutz, 1848, "Archives de Médecine ;"
- Vignes, 1850, "Des Tumeurs Sanguines de l'Excav. Pelvienne ;"
- Nélaton, 1851, "Gazette des Hôpitaux ;"
- Nonat, 1851, "Thèse de Cestan, Gallardo, et Prost ;"
- Huguier, 1851, Lecture before Surgical Society of Paris ;
- Gallard, 1855, "Union Médicale ;"
- Voisin, 1858, "De l'Hématocèle Rétro-Utérine."

I have not endeavored to record the names of all who have made valuable contributions in France, for had I done so, the list would have been a long one. Those only are referred to who have been foremost in advancing our knowledge.

It will thus be seen that we are indebted to France for the early literature of pelvic hematocele. Germany has of later years contributed a great deal towards it through the labors of Olshausen, Credé, Braun, Hegar, Virchow, Schröder, Sciffert, and others; and England through those of Madge, McClintock, and Tuckwell. In America, Prof. Gunning S. Bedford reported the first case which I can find recorded. More recently, we were indebted to Dr. Byrne, of Brooklyn, for a faithful report of several

cases. Prior to the year 1851, although it had attracted some attention, it was not well understood even in France, for, in 1850, we find Malgaigne cutting into a hematocele under the impression that he was enucleating a fibrous tumor, and losing his patient from hemorrhage.

Frequency.—This subject is not fully settled, a good deal of discrepancy of opinion existing concerning it. Prof. Olshausen, of Halle, declares that in 1145 gynecological cases he saw 34 hematoceles, and Seiffert, of Prague, reports 66 seen in 1272 cases of pelvic female diseases. In ten years Dr. Barnes has met with 53 cases, and in twenty years Dr. Tilt has seen but 12.

I do not regard the disease as being, by any means, very rare, but my experience assures me that many cases of cellulitis and a certain number of uterine and periuterine tumors are reported as those of hematocele.

Pathology.—The definition of hematocele has no relation whatever to the cause of the hemorrhage which gives material for the bloody tumor. The disease consists in the collection of a mass of blood in the pelvis, either above or below its roof. Whatever be its source, such a collection constitutes the affection which engages us. Ordinarily, we find that the flow giving rise to it takes its origin from one of the three following sources :—

- 1st. Direct escape of blood from vessels in or near the pelvis ;
- 2d. Reflux of blood from the uterus or pubes ;
- 3d. Transudation of blood in consequence of dyscrasia or peritonitis.

It is evident that hematocele is not a disease, but a symptom of a number of pathological conditions. As, however, the source of the hemorrhage which results in the bloody tumor very often cannot be ascertained, we are forced to deal with its most prominent and significant sign, taking this as an exponent of a state which is beyond the possibility of diagnosis.

In works upon practice written twenty years ago, we find dropsy treated of as a disease. In those of to-day it is regarded only as a legitimate result of renal, cardiac, or hepatic disease. Obstetric writers, even as late as ten years ago, described puerperal convulsions as a disease incident to parturition. Those writing ten years hence will probably regard them, as many do to-day, as one of the numerous consequences of renal disease. We may with good reason hope that the time will come when a similar improvement in description, based upon an advance in our knowledge of pathology, may connect itself with hematocele, but at present the discovery of the source of the hemorrhage is usually impossible.

The special sources of the hemorrhage inducing the affection, which have been revealed by post-mortem examinations, may thus be presented at a glance :—

1. *Rupture of bloodvessels in the pelvis.*

Utero-ovarian ;

Varicose veins of broad ligaments ;

Aneurism of artery ;
Vessels of extra-uterine ovisac.

2. *Rupture of pelvic viscera.*

Ovaries ;
Fallopian tubes ;
Uterus.

3. *Reflux of blood from the uterus.*

Reflux of menstrual blood.

4. *Transudation from bloodvessels.*

Purpura ;
Scorbutus ;
Chlorosis ;
Hemorrhagic peritonitis.

All of these causes have been proved by post-mortem research to have resulted in hematocele, but it cannot be questioned that rupture of any bloodvessel which empties its contents into the peritoneum might also do so. Blood poured into the peritoneum from rupture of the spleen, for example, would gravitate towards Douglas's cul-de-sac, because it is the most dependent portion of that membrane, and coagulating would give all the signs of a bloody tumor in that locality. At times the affection is indicative of serious internal lesion, rupture of the ovary or tube ; at others it results merely from imperviousness of the cervical or tubal canal, which prevents the advance of menstrual blood and causes it to regurgitate into the peritoneum ; while in still a third class of cases, it is created by pouring out of blood from the vessels of the peritoneum. The last condition has been described as hemorrhagic peritonitis, and especially pointed out by Virchow. Schröder believes that peritonitis always precedes the occurrence of hematocele. That it usually accompanies it is unquestionable, but if it be a precursor of this affection, which suddenly bursts forth upon a patient apparently in good health, it tells badly for our means of diagnosis of pelvic peritonitis. It is undeniable, however, that in some cases hematocele does follow and not precede the peritonitis.

Whatever be the source of the blood, it collects either in the most dependent part of the peritoneum, or in the pelvic areolar tissue beneath it. Here it remains for a time fluid, then undergoes partial coagulation, becoming a grumous mass like currant jelly, and lastly, all the fluid being absorbed, a hard, resisting tumor composed of fibrinous material remains. Should the collection have occurred in the peritoneum, its boundaries will be the walls of that cavity laterally and below, while a localized peritonitis forms for it a roof of effused lymph. If it collect in the areolar tissue of the pelvis, the effused blood will make its own nidus by percolating the loose structure and mechanically creating a space in it.

In either of these positions it is entirely absorbed and reduced to a hard, firm tumor, which remains for a long time, or is discharged by the vagina

or rectum, or into the peritoneum. The last point of evacuation is fortunately rare. Nonat¹ quotes Dupuytren for the following very ingenious and plausible explanation of the method of such absorption, which he likens to the process of digestion. The vessels of the cyst which are in contact with the mass remove its fluid portion, and thus its hard surface comes in apposition with the sac. This excites effusion of serum, which softens the fibrinous wall and renders it susceptible of absorption, which soon occurs. Then again contact excites a flow of fluid, and again this is removed, until the whole mass is diminished or completely absorbed.

Causes.—A glance at the recognized causes of the disease will make it evident that congestion of the pelvic organs must, in an eminent degree, predispose to it. This explains the fact that it has been found to have occurred most frequently during the period of ovarian activity and especially during a menstrual epoch.

The predisposing causes are—

- The period of ovarian activity, 15 to 45 ;
- Disordered blood state, plethora or anæmia ;
- The menstrual epoch ;
- Chronic uterine or ovarian disease ;
- The hemorrhagic diathesis.

The exciting causes are—

- Sudden checking of menstrual flow ;
- Blows or falls ;
- Excessive or intemperate coition ;
- Obstruction of cervical canal ;
- Obstruction of Fallopian tubes ;
- Violent efforts.

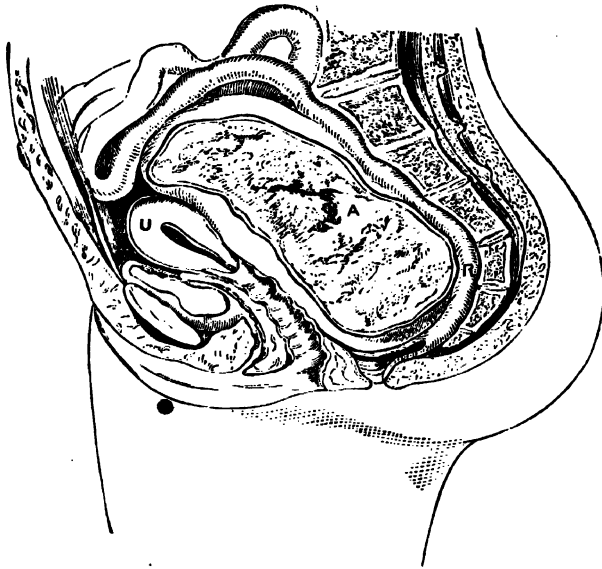
Varieties.—There are two forms of the affection, subperitoneal and peritoneal. In the latter the blood tumor forms within the peritoneum, where it in time becomes encysted unless death occur at an early period. In the former, it occurs in the areolar tissue of the pelvis, under the peritoneum.

The propriety of the consideration of the former under the same head as the latter has been contested by Aran, Bernutz, and Voisin, but from a clinical standpoint it appears to be quite valid. Not only have distinct instances of subperitoneal hematocele been recorded by such observers as Simpson, Olshausen, Tuckwell, and Barnes ; cases have, likewise, presented themselves, which commencing as subperitoneal ones have ruptured the peritoneal covering of the pelvis, and thus broken down the theoretical barrier which pathologists have been inclined to establish between the two varieties.

Of the two varieties, the peritoneal is much the more frequent, at the

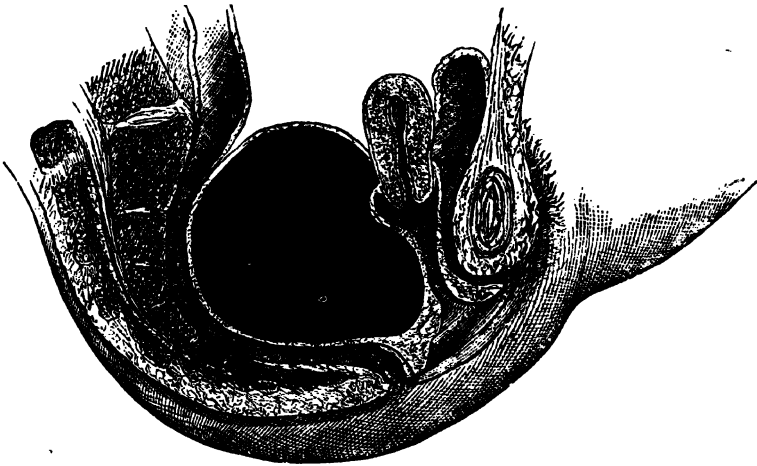
¹ Op. cit., p. 344.

FIG. 209.



Peritoneal hematocoele. (Barues.)

FIG. 210.



Subperitoneal hematocoele. (Emmet.)

same time that it is the more grave. In 41 autopsies Tuckwell found the tumor to be peritoneal in thirty-eight. In a case which I saw with Dr. Emmet, we were unable to make a diagnosis of a tumor which lay obliquely anterior to the uterus. In twenty-four hours the patient fell into a state of collapse, and as we saw her thus, the nature of the tumor, which

we were doubtful about on the previous day, became evident. Upon a post-mortem examination an ante-uterine hematocoele as large as a goose's egg was found under the peritoneum, through which it had broken, discharged a portion of its contents into the peritoneum, and caused collapse and death. This is the only ante-uterine, but not the only subperitoneal, hematocoele with which I have met.

Symptoms.—The absolute occurrence of hemorrhage is generally preceded by symptoms which are premonitory, as fixed, dull pain over the ovaries, derangement of menstruation, metrorrhagia, or prolongation of the menstrual discharge. The symptoms of the actual escape of blood will depend in great degree upon the nature and gravity of the accident which has given rise to it.

Sometimes the affection occurs without any violent symptoms and almost without warning. It will be appreciated that this would be so if it were due to gradual reflux of blood on account of constricted cervix, or transudation, the result of purpura. Frequently a sudden manifestation of symptoms occurs, and the accident is announced as rapidly as is cerebral apoplexy.

It is evident, then, that the symptoms must differ widely in cases marked by very great and sudden loss of blood, and those accompanied by very little. In the first there are evidences of profuse abstraction of vital fluid, great peritoneal shock, and excessive prostration. In the second these may all be so slight as to escape the notice of non-observant patients. The best course which can be pursued in reference to the matter is, I think, to take, as an example, a case of moderate severity, and guard the reader against supposing that all attacks give the same degree of intensity of symptoms.

Most prominent among the symptoms are—

- Severe pain in the pelvis;
- Pallor, faintness, and coldness of extremities;
- Sense of exhaustion;
- Nausea and vomiting;
- Metrorrhagia;
- Uterine tenesmus;
- Tympanites;
- Interference with bladder and rectum;
- Small and rapid pulse;
- Depressed thermometric range.

The patient feels as if a large and heavy body exists in the pelvis, and instinctively strives to expel it by the vagina. At times the pain complained of is very acute; at others, it is a dull and heavy aching.

After a variable time, generally within forty-eight hours, a reaction from this state of prostration occurs. Sometimes this is slight; at others decided. It is dependent chiefly upon the degree of inflammation set up

by the sanguineous accumulation acting as a foreign body. This is usually marked by the following symptoms:—

- Tendency to chilliness;
- Constipation;
- Suppression of urine;
- Great tympanites;
- Heat of skin;
- High thermometric range;
- Rapid pulse;
- Tenderness over abdomen.

All these symptoms point to two facts: 1st, sudden and excessive loss of blood; 2d, the existence of some substance in the pelvis which mechanically interferes with its viscera. A part of them might be produced by menorrhagia, a part by sudden retroversion; but a union of the whole will strongly excite suspicion of hemothecle, and call for a physical exploration.

Physical Signs.—Vaginal touch reveals a tumor usually posterior to uterus and vagina, and generally partially closing the latter. The mass thus felt, if the examination be made very soon after its formation, will be found to be soft, smooth, and obscurely fluctuating. If a number of days have elapsed before it be touched, it will give the impression of a smooth, dense, solid body. The uterus will be found pressed out of its position, generally upwards and forwards, so that the cervix will be above the symphysis. Sometimes, though rarely, it is forced out of the median line to one side.

Nonat¹ dogmatically announces that the uterus is never found between the tumor and the rectum, that is to say, behind the mass of blood; but Chassaignac² reports a case in which the sanguineous collection existed entirely between the bladder and uterus, and consequently must have forced that organ backwards; and similar cases are recorded by G. Braun, Olshausen, Barnes, Emmet, myself, and others.

Rectal touch will show that the bowel is partially closed by pressure from the tumor.

Abdominal palpation will reveal the presence of a hard mass which may extend only up to the superior strait, or as high as the navel. In cases where a small quantity of blood has been effused, and more especially where this has collected under and not in the peritoneum, an abdominal tumor may not be discovered.

By the aid of conjoined manipulation the shape, extent, and character of the mass may be further ascertained.

Differentiation.—The diseases with which hemothecle may be confounded are—

¹ Op. cit., p. 342.

² Courty, *Mal. de l'Utérus*, p. 912.

Pelvic cellulitis or abscess;
 Retroversion;
 Extra-uterine pregnancy;
 Fibrous tumor;
 Dislocated ovarian cyst.

The mass created by cellulitis and abscess is usually found at the side of the uterus, and not posterior to that organ; it develops less suddenly than hematocele; is hard at first, and gradually softens; is exquisitely painful to touch; does not lift the uterus and press it forwards; and is not usually accompanied by metrorrhagia.

Retroversion may present the signs due to the mechanical results of hematocele, but not those due to loss of blood. If pregnancy coexist, conjoined manipulation will usually suffice for diagnosis. If it should not, the uterine probe will elucidate the case.

Extra-uterine pregnancy does not develop suddenly, but slowly, and is characterized by many of the signs of pregnancy. In place of metrorrhagia there is usually, though not always, amenorrhœa.

Fibrous tumors grow slowly, are painless, and move with the uterus. They are irregular and hard, and do not usually push the uterus so far forwards and upwards. *

Displaced ovarian cysts are painless, show no signs of hemorrhage, and cause no constitutional disturbance or metrorrhagia.

Course, Duration, and Termination.—Hemorrhage from the sources enunciated as those of hematocele may be so great as to destroy life immediately. Five such instances are recorded by Voisin, and Ollivier d'Angers¹ mentions two in which death occurred in half an hour from rupture of a varicose utero-ovarian vein. Such a termination is, however, decidedly exceptional. The tumor generally disappears by absorption, is discharged by the rectum or vagina, or remains a hard, indurated mass long afterwards. Discharge is most frequently followed by recovery, but sometimes putrefaction occurs in the walls of the sac, septicæmia takes place, and death ensues. The process of absorption may be accomplished in three weeks, or six months may elapse before it is complete.

In some cases a slow and steady hemorrhage appears to go on for weeks, and render the bloody tumor gradually larger. In others hemorrhages subsequent to the first take place after this has become encapsulated. After subsidence of the symptoms of reaction, chill, fever, and sweating often come on late, marking suppuration in the mass, and slight septic absorption.

Prognosis.—The prognosis of hematocele must be governed in great degree by the amount of blood lost, the degree of constitutional shock resulting, and the intensity of reaction excited. As a rule it is favorable;

¹ Noeggerath, Bul. N. Y. Acad. Med., vol. i. p. 577.

especially so, I should say, when treated upon the expectant plan, and not by immediate surgical interference.

In cases of peritoneal form a graver prognosis is called for than in the subperitoneal, for evident reasons; and where a great deal of blood has been lost the dangers are greater than where the amount has been more limited. This is true not only from the fact that an excessive flow might cause death from exhaustion, but because the removal of so large an amount of coagulum, whether by absorption or discharge, must necessarily expose the patient to great dangers.

When death occurs it is usually a consequence of loss of blood, shock from sudden invasion of the peritoneum, peritonitis, rupture of the encapsulated mass into the peritoneum, or septicæmia.

Treatment.—The physician will rarely be called upon to resort to treatment before the amount of blood which is destined to be lost has collected in the pelvis. He will, however, often be present to witness the great constitutional disturbance and excessive prostration and pain which immediately follow the hemorrhage. The diagnosis being made, the indications for treatment will be simple enough:—

- 1st. To check tendency to further loss;
- 2d. To prevent death from prostration;
- 3d. To relieve pain.

These indications should, as far as possible, be met simultaneously, for the dangers to be combated all occur at one and the same moment. The patient should at once, without the delay attendant upon changing the clothing, etc., be put in a condition of perfect rest, and a full dose of morphia be administered hypodermically. A bladder of crushed ice or cloths wrung out of iced water should be laid over the hypogastrium, and bottles of hot water or warm bricks wrapped in flannel should be put to the soles of the feet. Should the stomach not be very irritable, brandy and water or iced champagne should be given freely by the mouth.

If prostration be so alarming as to threaten collapse, and the stomach be intolerant of ingesta, brandy or sulphuric ether in doses, the former of two drachms, and the latter of half a drachm, should be injected subcutaneously by the hypodermic syringe.

Reaction having taken place, the most perfect quietude should be observed, pain should be relieved and nervous shock prevented by the free use of opium or one of its salts, and the diet should consist of milk, animal broths, and gruels of farina, sago, or indian meal.

And now will arise the important question, whether the accumulated blood should be left for removal by nature, or should be evacuated by surgical means. Récamier, in introducing the subject to the profession, inaugurated the practice of evacuating such tumors, and Nélaton indorsed and popularized it. But experience taught Nélaton that the procedure was not judicious, and “to-day he proscribes it in an almost absolute

manner."¹ Immediate surgical interference presses its claims in consideration of the facts that—

1st. It is capable of cutting short a lengthy and dangerous disorder;
2d. It may save the patient from the dangers incident to absorption as well as discharge.

3d. It removes from the peritoneum or pelvic cellular tissue a foreign body, which, undisturbed, would prove the focus of inflammation.

It is not surprising that it was the favorite plan in the infancy of the subject. When, however, pathologists had had an opportunity of studying the natural history of the affection, it was as naturally abandoned, for the following reasons:—

1st. It was discovered that, when not interfered with, hematocele very generally passes away rapidly.

2d. It was discovered that the dangers of puncture were greater than those of the tumor left undisturbed;

3d. Medical means were found to exert a marked controlling influence over its complications.

With the light which experience has thrown upon this point, it appears to me that, without being dogmatic, we may safely adopt this rule. The mere presence of a large amount of blood in the peritoneum does not warrant evacuation. If, as time passes, suppuration within the sac, which has then pretty certainly become encapsulated, and septic absorption are manifested by chills, febrile action, and profuse sweating, the softening mass should be discharged by incision. In other words, so long as the accumulated blood appears to be doing no decided harm and nature seems to be causing its absorption, it should be left alone. But so soon as evidences of septicæmia are observed, it should be evacuated. Under these circumstances, a neglect of surgical interference would be culpable. Without such indications it should be avoided, and reliance placed upon medical resources, for it should be borne in mind that the collection of blood is usually in the peritoneum, and that incision of this membrane, in addition to its own inherent dangers, would always expose to those arising from admission of air.

* *Methods of Operating.*—The patient being placed upon the back, as if for lithotomy, a trocar and canula may be held in the right hand, guided to the most fluctuating and dependent part of the mass, and plunged in. Or, the patient lying on the left side, the perineum and posterior vaginal wall may be lifted by Sims's speculum, and an incision made into the wall of the tumor by a tenotomy knife or small bistoury. Through the opening thus made, one or two fingers should be introduced and the clots removed. After evacuation by either method, the nozzle of a syringe should be introduced into the sac, and a stream of tepid water, or of this with a

¹ Nonat, *op. cit.*

very small amount of carbolic acid, should be very gently and cautiously made to wash out the cavity remaining. This should be repeated once or twice in twenty-four hours, for prevention of septicæmia. All this should, as far as possible, be done under the antiseptic method.

After the abatement of acute symptoms, a blister, four by six inches, should, unless some contra-indication exists, be applied over the hypogastrium, and this may with advantage be repeated every ten or twelve days. Its results will often be very marked, and, although apparently harsh practice, it prevents much suffering, while it causes but little.

As time passes and pain is relieved, quinine, alone or combined with sulphuric acid, in full doses will prove a valuable remedy, and should be kept up perseveringly.

CHAPTER XXXIV.

MYO-FIBROMATA OR FIBROID TUMORS OF THE UTERUS.

Definition and Synonyms.—The parenchyma of the uterus is liable to undergo a localized hypertrophy, which results in the production of two varieties of tumors; the fibrous and the fibro-cystic. The first, which is one of the most frequent pathological conditions to which this organ is subject, will now receive attention, while the second and much rarer form will be treated of in a separate section.

By the older writers fibrous tumors were styled tubercula, steatomata, sarcomata, etc. Since their true nature has been more carefully studied by aid of the microscope and been understood, they have been described under the names of fibrous tumors, uterine fibroids, fibroma, and more recently, by Virchow, myoma. I have adopted the terms which head this chapter, following the example of Billroth for the first, and of Klob for the second, for the reason that neither that of fibroma nor myoma alone expresses the existing pathological condition. Billroth¹ rejects the latter name, which signifies that these growths consist in hypertrophy of muscular substance; and at the same time he refuses to admit the former, as that conveys the equally incorrect idea that they are constructed of connective tissue. Fibroid (*fibrosus* and *εἶδος*), resembling fibrous tissue, is at least not calculated to mislead, while myo-fibroma expresses the exact truth.

History.—Until the time of Dr. William Hunter, who wrote towards the close of the eighteenth century, the true nature of uterine fibroids was

¹ Surg. Pathol., p. 583.

not appreciated. They were confounded with malignant growths, of which they were regarded as a variety. He described them under the name of fleshy tubercle, and contributed greatly to the knowledge of their pathology; but it was not until the writings of Chambon,¹ Baillie, Bayle, and others that the subject was fully elucidated. Sir Charles Clark, in 1814, wrote an excellent chapter upon them, which would almost answer the requirements of our day.

Pathology.—Surprise that any confusion should have existed between these tumors and cancerous growths, will cease when we consider that their identity is boldly assumed by so careful an observer as Dr. Ashwell, as late as 1844. He gives five reasons for his belief, which he declares appear to him “conclusive.” His reasoning has failed to convince others, no writer since his time having adopted the view which Dr. Hunter succeeded in abolishing, and no fact in gynecology is now more fully settled than that of the non-malignancy of these tumors.

Until recently the question has not been settled as to the possibility of their undergoing cancerous degeneration. Bayle and Lobstein have declared that they never do so, and the researches of Cruveilhier and Lebert tend to support the view; while Kiwisch, Dupuytren, Atlee,² and Simpson believe that malignant degeneration occurs in rare cases. The weighty authority of Virchow³ is cast into the scale favoring the possibility of both carcinomatous and sarcomatous degeneration, and Klob agrees in this assertion. “In 1862,” says the latter author, “a singular specimen was added to the Salzburg Museum. From a fibroid tumor the size of a child’s head, situated in the posterior walls of the uterus, carcinoma had undoubtedly been developed without any other portion of the body being affected, and I am therefore constrained to allow the possibility of such a transition, although I cannot recall a second case of this kind either in the literature of the subject or in my rather extensive experience.”

Although this case seems to settle the matter of possibility, at least, it must not be forgotten that beyond doubt such a change of type is exceedingly rare. It is in this connection a fact worthy of note that in the negro, in whom fibroid tumors are so common as to be regarded by some as almost universally met with after the thirtieth year, carcinomatous affections of the uterus are very rarely seen.

I have met with two cases in which uterine fibroids which had been known to exist for eight and ten years, and had behaved like benign growths, suddenly took upon themselves the aspect of sarcoma, and led to a fatal termination. In one case the tumor was removed post-mortem, and in the other ante-mortem with great relief to symptoms.

¹ Mal. de l’Utérus.

² McClintock, Diseases of Women.

³ Pathologie des Tumeurs, Paris, 1871.

Uterine fibroids may develop singly, when ordinarily they do not attain to a very great size. Sometimes, however, they exist in great numbers, and grow to a very large size. Courty reports one weighing fifty pounds, and I have removed one, with uterus and both ovaries, of the same weight. Some years ago I exhibited to the New York Pathological Society, the uterus of a negress which contained thirty-five tumors of every size between that of a foetal head and that of a marble.

Fibroids may develop in any part of the uterus; but the usual site is in the body or fundus. Mr. S. Lee examined seventy-four preparations in the London museums, and found that the rarest of all locations for them is the cervix. A very interesting instance of a large tumor developed below the os internum is reported by Dr. Murray, in the sixth volume of the London Obstetrical Transactions. I have myself removed several of this character from the parenchyma of the cervix, the body of the uterus being in no wise involved.

Their structure varies very greatly, not only from their original development being different, but from their being susceptible of several diseased states, which will very soon be mentioned, and which produce their characteristic alterations. The typical form is that of hard, resisting fibrous tissue, which creaks under the knife. Under the microscope this is found to consist of long, fine fibres, generally united in bundles; of fusiform fibre-cells analogous to fibro-plastic elements; and of round or elliptic granules of small size; the whole being bound together by fine intercellular substance.

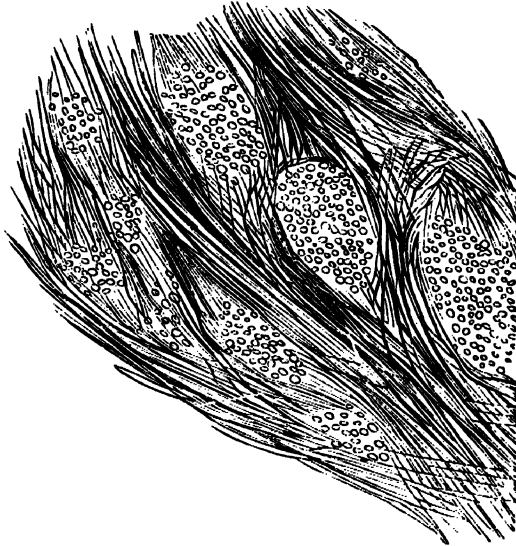
They consist of the hypertrophied elements of the uterus, to which organ they are strictly homologous. In the majority of cases, it is declared by recent pathological investigators, that connective tissue preponderates in their construction, but there is always a certain degree of muscular hypertrophy concerned in their development; hence Billroth's objection to the terms fibroma and myoma. In some cases the amount of muscular exceeds that of connective tissue in their construction. This, which may be styled the normal type of the uterine fibroid, is departed from by formation of cysts in the midst of the fibrous tissue, which constitutes the tumor one of fibro-cystic character.

Uterine fibroids are liable to a variety of diseases, among which the most frequent are œdema; inflammation; gangrene; fatty, colloid, and calcareous degeneration; and apoplexy. The last consists in rupture of small bloodvessels within the mass, and consequent accumulation of blood.

Very rarely the whole mass becomes a ball of calcareous matter, which, projecting in utero and becoming detached, is sometimes discharged per vaginam. This is the disease which was described by old writers as uterine calculus. The uterine attachment of fibroids of compound character is sometimes the seat of a species of varicose degeneration of the small

vessels, which causes the structure to resemble erectile tissue. Tumors thus affected have been styled by Virchow, telangiectatic tumors. This vascular structure readily bleeds, and in one case I saw it the cause of a small

FIG. 211.



Uterine fibroma. Oblique longitudinal section of muscular cell-bundles. (Billroth.)

hematocele. But large vessels are likewise discovered in the pedicles of fibroids; Caillard reporting one the size of the radial artery. Klob has met with but one such vessel, which was the size of the uterine artery.

Varieties.—Klob divides these growths into two classes—simple and compound. The first consists of one tumor, which is generally spherical, and which is connected by loose connective tissue with the uterus. The second is a compound tumor, made up of a number of small fibroids, connected by loose connective tissue. The second variety is more vascular than the first, and its surface is nodulated and not smooth. Both these classes present themselves clinically in three varieties, which are created by the locality of the growths in the walls of the uterus. If they lie under the mucous membrane projecting into the uterus, they are called submucous; if under the peritoneum, subserous; if in the wall of the uterus, interstitial.

If a tumor be situated in the wall of the uterus, it may remain there until it assumes large dimensions. Should it be near the mucous or serous lining, it is subjected to contractile efforts on the part of the surrounding parenchyma, which are excited by its presence, and which often in time force it towards the uterine or abdominal cavity. Sometimes its connec-

tion with the mother tissue is kept up by a broad base ; sometimes it is limited to a long, slender pedicle, which, in the case of the subperitoneal varieties, allows of great mobility. Should the mass be forced into the uterine cavity, and gradually assume a slender, peduncled attachment, it receives the name of fibrous polypus, which is therefore a variety of submucous fibroid.

These neoplasms often affect the uterus very curiously. The interstitial varieties produce every form of displacement ; the sub-mucous sometimes produce complete inversion of uterus and vagina ; and the sub-peritoneal, Virchow declares, by dragging the fundus upwards not only draw out the cervix so as to make it resemble the urethra, but absolutely cause "the spontaneous separation of the neck from the body of the uterus." The last variety, too, sometimes shows most singular migrations. The pedicle being broken, they have at times been found rolling about freely in the peritoneum, and at others, having set up adhesive inflammation, they have been found detached from the uterus, and attached to some other abdominal viscus.

Causes.—The predisposing causes, or rather those generally regarded as such, are—

- Race, the African being peculiarly liable ;
- Age, from thirty to forty-five ;
- Nulliparity ;
- Menstrual disorders of long standing.

Concerning the exciting causes, one writing in the year 1874 may, unfortunately, quote the words of Sir Charles Clarke, recorded in 1814 : "Nothing is known respecting the cause of this disease." Sixty years of research have thrown no light upon its etiology.

Complications.—The most frequent of the complications which show themselves in the course of the disease are—

- Endometritis ;
- Displacement ;
- Cystitis ;
- Obstruction of the rectum ;
- Hemorrhoids ;
- Pelvic peritonitis ;
- Areolar hyperplasia ;
- Atrophy of uterine walls ;
- Grave menstrual disorders.

Every one who has made autopsies upon cases, in which uterine fibroids have existed, must have been struck by the fact of the varied appearance of the walls of the uterus. Where several tumors exist the uterine cavity is sometimes so perverted and rendered so tortuous that it cannot be traced, while in cases where a large number of tumors are formed, the

whole uterus seems to have disappeared, its place being usurped by tumors. In the case already cited, in which I counted thirty-five tumors, no trace of the uterus could be discovered by the naked eye, above the os internum. In some cases the vice of nutrition set up by the presence of these growths results in thickening of the uterine walls by the establishment of interstitial hypertrophy, in others localized points of thickening exist, while in others still the wall of the uterus may become so attenuated by distention and atrophy as to leave only a thin film to represent it. This distended and attenuated organ is that which Walter has styled the "membranous uterus."

Symptoms.—The enumeration of complications just given is a sufficient explanation of the great number of rational signs which present themselves, for not only do we meet with the symptoms of fibroid tumors, but with those of a variety of disorders which they excite. Most prominent among the symptoms are—

- Menorrhagia or metrorrhagia ;
- Irritability of bladder and rectum ;
- Pain throughout the pelvis ;
- Uterine tenesmus ;
- Profuse leucorrhœa ;
- Dysmenorrhœa ;
- Signs of pressure on crural nerves and vessels ;
- Watery discharge from uterus.

These symptoms are not equally common to the three varieties of the affection. Subperitoneal tumors often, and interstitial tumors sometimes, are accompanied by none, or at least by very few, of them. It is the submucous variety which most constantly and prominently develops them.

The immediate effects of uterine fibroids are exerted upon the system through the following means :—

- 1st. They produce excessive menstrual discharge and profuse leucorrhœa, which impoverish the blood.
- 2d. They press upon and derange the innervation of neighboring parts.
- 3d. They, in some way, interfere with hematosis and the functions of the ganglionic nervous system.
- 4th. They disorder the mind by creation of depression of spirits, from the fact that the patient recurs with gloomy apprehension to their existence almost constantly.

Physical Signs.—Although the rational signs are so numerous and striking, they can never do more than excite a suspicion, which leads to investigation by physical means.

In the case of a large tumor no difficulty in diagnosis will present itself ; for the results of vaginal touch, abdominal palpation, and conjoined manipulation will be so decided as to settle the character of the case defini-

tively. When, however, a growth of small size exists, great difficulties will often attend diagnosis, which may be delayed until the case has been under observation for a long time. A thorough examination involves full and careful exploration, by touch, of the anterior and posterior surfaces of the uterus, as well as of its cavity to the fundus.

To examine the external surfaces of the uterus, the patient should lie upon the back with the thighs flexed. All constriction should be removed from the waist, and the bladder and rectum emptied. The examiner then, depressing the uterus by the right hand placed over the hypogastrium, should sweep the index finger of the other as high up as possible over the posterior wall, first by vaginal and then by rectal touch. While the finger in the vagina or rectum lifts the uterus, the tips of the fingers placed on the abdomen should be forced behind the fundus, and downwards over the posterior uterine wall so as to approach the finger within the pelvis. By these means the posterior wall will be superficially examined in women with tense abdominal muscles, thoroughly in those in whom they are thin and relaxed.

The finger in the vagina now drawing the cervix forwards, the fingers of the hand on the abdomen should be made to depress its walls so as to sweep from the fundus over the anterior surface down to the cervix. The finger under the cervix lifting it up will offer itself as an opposing force to the hand on the abdomen. This manœuvre will fully expose to examination the anterior surface of the uterus, unless the patient be very fat. Should she be so, a tenaculum may be fastened in the cervix, and the uterus drawn down by it, so that the posterior wall will be better within reach of rectal touch, and the anterior wall within that of vaginal exploration when the finger is pressed firmly against the base of the bladder.

When, in a case in which it is of importance that a certain diagnosis should be arrived at, it proves impossible to do so by use of the means thus far mentioned, the modification of Simon's method, mentioned in the chapter upon Diagnosis, may be resorted to with great confidence as to the results which it will yield.

For investigating the interior surface of the uterus, the neck should be fully dilated by tents, and immediately upon their removal, the uterus being depressed as for examination of the outer surface, the finger should be carried into the cavity of the body.

Differentiation.—The diseases which may be confounded with fibrous tumors are—

- Pregnancy ;
- Periuterine cellulitis or abscess ;
- Pelvic hematocoele ;
- Anteflexion or retroflexion ;
- Ovarian tumors ;
- Fecal impaction.

In pregnancy, amenorrhœa and other signs of utero-gestation exist, while in uterine fibroids there is usually a tendency to menorrhagia. In pregnancy the uterus is symmetrical, in fibroids usually asymmetrical. The tumor found in pregnancy is generally softer than in fibroids, and more uniformly median in position. In a doubtful case time, with its development of fetal movements, will always settle the point.

The tumor created by cellulitis is usually immovable, very sensitive, accompanied by fever, comes on suddenly, and fixes the uterus. A fibroid tumor is the opposite of this in every respect.

Hematocele generally occurs suddenly and with violent symptoms. The tumor is sensitive and immovable, at first semi-fluid, and accompanied by tympanites and constitutional disturbance. Fibroid tumors show no such symptoms.

Flexion may be determined by the uterine probe, and differentiation established between it and fibroids by conjoined manipulation and rectal touch.

Ovarian tumors of solid form are the only ones which usually give difficulty in diagnosis, and these are rare. They are unaccompanied by menorrhagia, can be pushed from side to side without affecting the position of the uterus as ascertained by vaginal touch, and are less affected by movement of the uterus by means of the uterine sound. In cases where an ovarian tumor is firmly attached to the uterus, differentiation is not only difficult, but often impossible.

Fæcal impaction presents a tumor which can often be indented by pressure, is generally in the caput coli, does not move with the uterus, gives severe intestinal pain and disorder, and exerts little influence on the functions of the uterus.

From this rapid disposal of the subject of differentiation it must not be supposed that it is always an easy matter. In many cases only careful watching will enable the diagnostician to arrive at a certain conclusion.

Prognosis.—The practitioner cannot be too cautious or display too much reticence in pronouncing the prognosis of uterine fibroids. There are few diseases in which the young physician will be led into greater error or be made to regret more decidedly an over-confident prediction. Fibroid tumors, unless of great size, rarely end fatally, however gloomy the prospect may appear when they are first discovered. And yet death from them is not so infrequent as to warrant an entirely favorable prognosis.

Frequency.—These statements are to a certain degree corroborated by an examination into their frequency. Were they as dangerous as is sometimes supposed, a large number of deaths would be annually produced by them, for, to use the words of McClintock, “without question the most frequent organic disease of the uterus, if we except inflammation and its effects, is fibrous tumor.” Bayle estimated that of all women dying be-

yond thirty-five years of age, twenty per cent. were thus affected. Even supposing that this assumption was an exaggerated one, an idea of the frequency of the affection may be gathered from the fact of his venturing upon it, and surprise at it will be modified when the following extract is read from Klöb.¹ In speaking of their frequency, he says, "At the climacteric period, it is such that undoubtedly 40 per cent. of the uteri of females, who die after the fiftieth year, contain fibroid tumors."

Let the diagnostician who has discovered a uterine fibroid, and feels prompted to give a grave prognosis concerning it, bear these facts in mind, and he may be prevented from injuring his patient's comfort and his own reputation by so doing.

Course, Duration, and Termination.—As already stated, these growths may attain the enormous weight of fifty pounds. Fortunately they very rarely reach such dimensions, but even when they do not, they sometimes exhaust the patient by metrorrhagia, leucorrhœa, hydrorrhœa, and a low grade of constitutional irritation, often attended by hectic fever. But this termination, like the preceding, is exceptional. Having attained a moderate size they generally remain stationary, or increase slowly until the menopause, creating considerable inconvenience and depreciating the patient's strength by hemorrhage. Then undergoing a certain degree of atrophy with the cessation of uterine and ovarian functions, they cease to be, to any degree, a source of annoyance, or at least of danger. Even during the age of uterine activity, nature may, unaided, effect a cure by the following means :—

Absorption or atrophy ;

Direct expulsion by rupture of attachment ;

Sloughing, from deprivation of nutrition, or inflammation ;

Calcareous degeneration ;

Gangrene.

The tumor is sometimes deprived of nutrition by inflammatory action occurring in the vascular structure of the uterine attachment, which has already been described, collections of pus being sometimes discovered in it.

Throughout their existence these tumors sympathize in the uterine changes which attend upon these three conditions: menstruation, uterogestation, and the menopause. With the occurrence of menstruation they, like the tissue of the uterus, become congested, enlarged, and sensitive. During pregnancy their component muscular fibres grow, and probably undergo retrograde metamorphosis after delivery. As senile atrophy succeeds the menopause, their nutrition is impaired, and fatty and calcareous degeneration sometimes occur.

Sometimes fluid collections take place within these masses, some morbid process destroying their tissue as if by liquefaction. The fluid thus col-

¹ Op. cit., p. 177.

lecting may be purulent, watery, or sanguineous. In some cases a colloid degeneration is said by pathologists to occur in or near the centre of the mass, which softens down and liquefies the fibroid tissue. In others, an apoplexy takes place, which creates the initial cavity, and this is subsequently found filled with the débris of the clot and with turbid serum.

Palliative Treatment.—In the vast majority of cases of interstitial and subserous fibroids, the efforts of the practitioner should be limited to palliation of the evils resulting from these growths. These evils will generally be due to either one or all of the three following conditions which result from them: displacement of the uterus; pressure on surrounding organs and parts; and menorrhagia or metrorrhagia. The first will often be greatly relieved by restitution of the displaced organ, and its retention at, or even above, the superior strait. This may be accomplished by the ordinary means of replacement, and the use of the bulb pessary (Fig. 192), in difficult cases, or of one of the varieties of intra-vaginal anteversion or retroversion pessaries, in less obstinate ones. By a properly adjusted pessary, aided by complete removal of weight and constriction from the abdomen, and the use of an efficient abdominal pad, the second set of evils may be ameliorated. Relief of hemorrhage generally proves difficult, and not rarely impossible. The presence of the fibroid in utero keeps up congestion of the endometrium, and this results in leucorrhœa, hydrorrhœa, and menorrhagia. Fortunately, good can generally be, to a limited extent, at least, effected by rest in the recumbent posture during the menstrual periods; the use of hemostatic agents, as elixir of vitriol, ergot, viscum album, cannabis indica, gallic acid, etc.; and the use of the tampon after a sufficient loss has occurred to meet the demands of ovulation. The practice of applying a tampon of carbolized cotton impregnated with solution of alum after a menorrhagic flow has, under these circumstances, lasted for four or five days, I often resort to, and never with any but good results. Without some such controlling influence, the patient will commonly become greatly exsanguinated. While these means are being adopted the bowels should be kept regular, and the functions of the skin and liver carefully supervised.

In some cases the engorged condition of the mucous membrane lining the uterus causes it to become covered by little fungoid growths, which keep up and greatly increase the amount of hemorrhage. Under these circumstances, the application of the wire curette is of great service. Even if there should be an error in diagnosis, this treatment will accomplish good by severing the distended vessels of the mucous membrane, and relieving congestion.

Should it be found that by this means even, hemorrhage is not sufficiently controlled, resort should be promptly had to palliative resources of a more decidedly surgical character. These may prove efficient as

hemostatics, while at the same time they prepare the way for curative means, if they should be in time deemed necessary.

It has been found that hemorrhage due to uterine fibroids is often greatly diminished by section of the uterine neck, a practice which was first inaugurated by Amussat, and imitated by Nélaton, Brown, and McClintock. In some not very explicable manner, cutting through the cervical canal by deep incisions on its sides exerts a good influence in controlling this form of hemorrhage. A still more powerful effect will follow incision directly through the investing coat of the tumor itself, so as to cut its capsule, its superficial layer of fibres, and its superficial blood-vessels, and thus diminish its vascular supply. When, however, the tumor becomes so accessible as to render this possible, complete removal becomes so likewise, and should be preferred.

Curative Medicinal Means.—Whether absorption of these neoplasms can be excited by any of those medicines styled absorbents, is not certainly ascertained. Tumors have in some instances been known to disappear while such drugs have been employed, and perhaps they did so in consequence of their use. But no such effect can be looked for with any confidence. Indeed, with our present experience, such a result must be regarded as decidedly exceptional. Scanzoni, after advising those medicines which are most popular as stimulants of absorption, says, "We do not remember a single case in which, with the means indicated, or with others, we have obtained the complete cure of a fibrous body." If such drugs be tried for this purpose, they should be continued for many months, and even a year or two, before the trial can be considered fairly made, for their action is never immediate. Those in greatest esteem are iodine, the iodide and bromide of potassium; that class of drugs supposed to possess the power of inducing fatty degeneration, as arsenic, phosphorus, and lead, "steatogenic" drugs, as they have been styled; preparations of lime; and the waters of certain mineral springs, as Kreuznach, Kissingen, Krankenheil, etc. Some of these waters may be employed externally in the form of baths as well as internally.

About eight years ago, a series of eight cases of uterine fibroids was published by Hildebrandt,¹ of Königsberg, in which the only treatment adopted consisted in the subcutaneous injection of ergot. In seven, an extraordinary improvement took place. The theory of the plan is this: compression of the tumor by ergotic contraction of uterine fibre interferes with nutrition; fatty degeneration in consequence occurs; and the tumor is thus rendered susceptible of absorption. The results obtained by Hildebrandt were so favorable, that even the most sanguine were led to fear that future experience might not prove as successful. His method has, how-

¹ Berlin Klin. Wochenschrift. Amer. Journ. Obstet., Nov. 1872.

ever, been so far tested by others that it must be conceded that it promises better results than any other which has been employed.

The following is a condensed synopsis of some of Hildebrandt's cases:—

CASE 1. Patient *æt.* 31; tumor for three years; uterus as large as at seventh month of pregnancy; hemorrhages frequent and copious. Injections of ergotine practised daily for six weeks, when menses became regular and painless. Injections continued daily for fifteen weeks more, when tumor, which had been growing smaller from week to week, was found to have disappeared.

CASE 2. Under use of injections uterus "diminished in volume by absorption of the intrauterine tumor; menstruation became regular; and pain and leucorrhœa disappeared."

CASE 3. Patient *æt.* 30; profuse sanguineous discharges, sometimes lasting from six to eight months, since the age of sixteen. Anæmia and emaciation extreme; fundus of uterus nearly midway between pubis and umbilicus; by touch, tumor distinguished in the anterior wall of uterus. Subcutaneous injections daily from January 17th to March 5th, when the patient was discharged; menses regular; general condition improved; and uterus notably diminished in size, the vaginal portion having in great part returned to its normal volume.

CASE 6. Patient *æt.* 45; uterus reached to umbilicus; anteverted; large fibroid in anterior wall; hemorrhage; and irregular menses. After resort to injections, improvement was well marked; fundus descending to a point midway between umbilicus and pubes.

The solution used by the hypodermic syringe consisted of three parts of the aqueous extract of ergot to seven and a half of glycerine and the same of water. The point of puncture was the hypogastric region. At each injection three grains of the extract were used.

In some cases this treatment produces severe ergotism at so early a period that it has to be desisted from, while at others it results in the production of small abscesses of painful character. Hildebrandt declares that the introduction of the needle straight down into the subcutaneous areolar tissue obviates the occurrence of abscesses. Should the subcutaneous method disagree with the patient, as it did in two out of Hildebrandt's nine cases, ergot may be given by mouth or rectum, with the prospect of exciting tonic uterine contraction, diminishing vascularity, and lessening sanguineous and mucous discharges, and subsequent growth of the tumor.

Although the experience of others with this practice has not been so good as that of Prof. Hildebrandt, all who have tested it must admit that his method possesses great merit, and fills a place in treatment which has heretofore been unoccupied. Ergot not only acts by exciting uterine action and thus interfering with the growth and retention of the neoplasm, but it likewise causes contraction of the bloodvessels themselves, and thus impairs nutrition and limits development. Its advantages as a palliative

means have been already mentioned ; in that capacity it also acts in the two ways, of constrictor of uterine fibre and of arterial muscle. This explains its results in hemoptysis and other varieties of hemorrhage. Prof. Hildebrandt, in the American Journal of Obstetrics, gives an account of 19 cases, and in the Berlin Klin. Wochenschrift of 8 cases, in which he has treated fibrous tumors of the uterus by hypodermic injections of ergotine. Out of the number 3 were cured; 11 were diminished in size, and the metrorrhagia and leucorrhœa cured; 4 showed no effect from the treatment; and in 9 the tumor was not affected, although the hemorrhage was relieved. One tumor of very large size extending above the umbilicus entirely disappeared.

He considers the treatment most likely to result favorably—

1st. When the tumor is submucous;

2d. When the tumor is richly provided with muscular tissue, and possesses the consistence and feel of a tense, elastic cyst;

3d. When the walls of the uterus are sound and capable of vigorous contraction;

4th. When the chronic metritis or parametritis has been removed by proper treatment;

5th. When the tumor has collected no capsule.

Byford has collected 101 cases from various sources; of these he reports—

Cured	22
Benefited by relief of hemorrhage and leucorrhœa	19
Tumors diminished in size and hemorrhage removed	39
Resisted treatment	21

The best preparations for hypodermic injection that I know of are Squibb's ergotine dissolved in glycerine and water, Merck's ergotine, and Bartholow's solution.

These should be used fresh, the needle should be previously washed in carbolized water, the fluid thrown well down into the subcutaneous cellular tissue, and the part gently rubbed with the palm of the hand after injection until all tumefaction disappears. The injections should be given from three to seven times a week.

Subperitoneal tumors are not nearly so favorably affected by this method as interstitial and submucous growths. In the last variety the danger of the creation of sloughing at a time when the rigidly contracted state of the os prevents resort to surgical procedure for immediate removal should not be overlooked. I have seen quite a number of fatal cases from this cause.

Hildebrandt's method is a very trying one for the patient. Many suffer from abscesses, some from severe uterine pains, while others positively object to the pain and annoyance of repeated punctures to such an extent as to cause the physician to desist from treatment.

Dr. Ephraim Cutter, of Boston, has obtained excellent results in these cases from a strictly animal diet of the most nutritious character, and the passage of the galvanic current through the tumor by puncture on each side of the abdomen by strong steel electrodes. He declares that very little constitutional disturbance follows these punctures, and that great diminution of size commonly results, with occasional complete cures.

In April, 1880, Dr. Cutter reported to the Boston Gynecological Society the following results :—

No. of cases treated by electrolysis	50
No. in which growth was arrested	32
No. in which growth was not arrested	7
No. which ended fatally	4
No. which were cured	4
No. which were relieved merely	3

Before taking up the consideration of the surgical resources applicable to uterine fibroids, I would sum up the general management of their varieties in the following manner :—

1st. With the means at present at our command, all the varieties of fibroids, the subserous, the submucous, and the interstitial, are amenable to extirpation ; but the danger of removing the first by laparotomy is so great that this should not be resorted to unless life be threatened by the non-removal of the tumor.

2d. If an interstitial fibroid be readily accessible by cutting through its investing tissues, it should be removed.

3d. Submucous fibroids divide themselves into two classes, thus : if the os internum be obliterated, and the tumor present at or within the os externum, the case is most favorable for removal ; if the os internum be unyielding, and the cervical canal undilated, danger will always attend dilatation preliminary to removal of the growth.

4th. In cases unfavorable for removal it is best to resort to good diet, tonics, ergot, and means calculated to palliate symptoms, and await an alteration in existing circumstances which may prove more favorable to a resort to radical treatment.

Curative Surgical Procedures.—The gynecologist of to-day in recognizing the important advances in his department, signalized by the discovery of ovariectomy, the cure of vesico-vaginal fistula and reparative operations upon the perineum, the uterus, and the vaginal walls, often forgets how much has been done in reference to the extirpation of uterine fibroids of all three varieties. Prior to the present century, and even during the first half of it, the operation of laparotomy for subperitoneal tumors of this class was unknown ; interstitial tumors were uninterfered with ; and he who studies the methods of those who attacked submucous growths by the constricting ligature, will at once appreciate how hazardous, difficult, and uncertain were the means at the disposal of the surgeon of the olden time for dealing with them.

The key-note to the modern advance in this subject was struck by the late Dr. W. L. Atlee, of Philadelphia, when in the year 1853 he presented to the American Medical Association an essay entitled, "The Surgical Treatment of Certain Fibrous Tumors of the Uterus heretofore considered beyond the Resources of Art." This essay received the prize of the association, and to-day stands as the pioneer article in the surgical literature of these grave and otherwise irremediable cases.

Both in this country and in Europe the lead of this bold surgeon has been followed, and the methods which he advocated a quarter of a century ago, and which slowly battled with a pretty decided opposition, have come to be recognized as legitimate surgical resources.

The views of Atlee, as published in 1853, may be epitomized in these three propositions :—

First—If a non-pedicated tumor cannot, from the nature of its attachment and envelopes, be expelled or drawn by mechanical means through a dilated os uteri, it is advisable to make by the knife a means of escape for it into the uterine cavity, through its capsule or enveloping tissues.

Second—If the tumor thus offered an outlet cannot be removed, it should be forced into and out of the uterine cavity by cutting the cervix, and persistently using ergot.

Third—The tumor, once coming within reach, it should as soon as practicable be enucleated or detached, and removed by the surgeon.

That this method of treating such cases is attended by the great dangers of septicæmia, peritonitis, hemorrhage, and exhaustion, is not to be denied. But it must be borne in mind that while heroic interference is environed by risks, a Fabian course, a policy of watching, waiting, and inactivity, is by no means always a safe one. The growing tumor creates exhausting hemorrhages, dangerous mental depression and anxiety, and disturbance of the functions of nutrition and excretion, which slowly drag the patient down to death.

The dangers attending strangulation of a uterine tumor by a constricting ligature are now recognized as of so grave a character as to render every cautious surgeon averse to the employment of this method, and although the boldness of the plans recommended by Atlee may appal the timid practitioner, it is now pretty generally appreciated that in apparent temerity there is a degree of safety not to be found in measures which are ostensibly milder and safer.

The plans now usually adopted for the extirpation of submucous and interstitial fibroids may thus be summarized :—

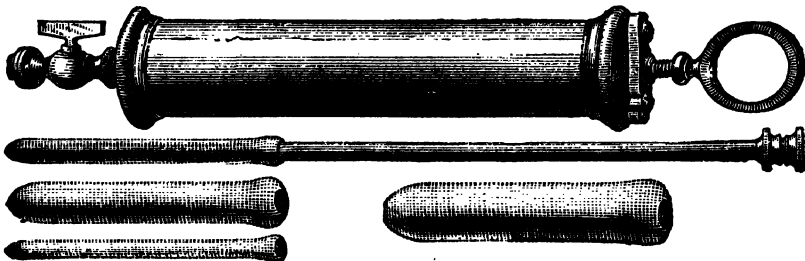
- Excision ;
- Écrasement ;
- Avulsion ;
- Enucleation ;
- The production of sloughing.

The two elements which govern success in the removal of these growths by the surgical processes which now come to be considered are these: 1st, the degree of projection of the tumor into the uterine cavity; 2d, the degree of dilatation of the cervical canal. I do not say that they decide the propriety of operation. Removal may be practised where the tumor is to a great extent interstitial, only causing slight protrusion inwards of the mucous membrane, and where the cervical canal is completely contracted. But in such cases it is more difficult of accomplishment, and much more dangerous to the life of the patient. An interstitial fibroid excites uterine contractions, which in time usually extrude it, making it either subserous or submucous. In both cases it carries with it a covering of uterine tissue, which when it enters the uterine cavity is one of the influences which prevent its expulsion into the vagina; the closure of the cervix being another. In some cases nature unaided overcomes these obstacles. When they are too powerful for her, art comes to her aid and removes them.

If the cervical canal be sufficiently dilated to allow of immediate access to the tumor, much danger, delay, and trouble are avoided by that condition. If it be deemed best to force open the way to the neoplasm, the cervical canal may be distended by cutting through it up to the vaginal junction, and giving ergot to expand it; by dilating it gradually by tents; and by forcibly dilating it by water bags, or by graduated dilators. Hydrostatic dilatation is applicable only when the part is dilatable, and offers little resistance.

The ordinary water bags known as Barnes's dilators are not powerful enough for the expansion of the cervix of the non-puerperal uterus, and besides this they dilate irregularly. Molesworth's dilators, shown in Fig. 212, are by far more efficient in these cases. This instrument consists of

FIG. 212.



Molesworth's cervical dilators.

a series of long bags of pure rubber, constructed in such a manner as to secure lateral expansion without elongation, and a nickel-plated force-pump, worked by screw power, by which water or air can be forced into the bag, to dilate it as rapidly or as slowly as desired. Each instrument

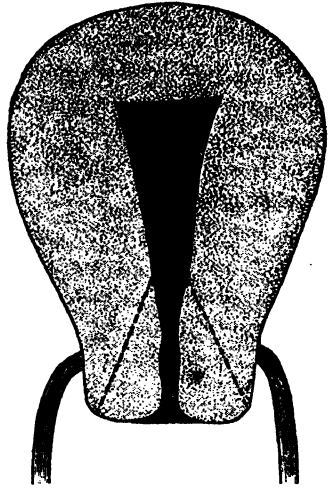
has a small stopcock, enabling the operator, if he desire, to remove the pump, leave the bag in position, and thus continue dilatation for any length of time.

Each instrument has several bags, the smallest of which is one-eighth of an inch in diameter, and capable of being dilated to from one-half to three-fourths of an inch. The largest bag is one-fourth of an inch, and can be dilated to from one to one and a half inches.

The method which I have found safest and most certain for preparatory dilatation of the cervix is that of cutting through its walls laterally by Paquelin's thermo-cautery in the direction shown by the dotted lines in Fig. 213, and then keeping the patient under the hypodermic use of ergot.

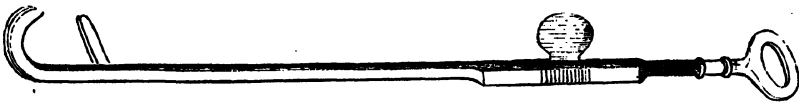
Excision.—Should a small submucous fibroid project into the uterine cavity, it may be removed by the severance of its attachment by means of the knife, scissors, or other cutting instrument. If it be within reach of the knife or scissors, it may be removed by them. In case it be attached higher in the uterine cavity, the polyp tome of Aveling may be made to answer a good purpose (Fig. 214).

FIG. 213.



Incision of cervix by Paquelin's knife for the accomplishment of dilatation.

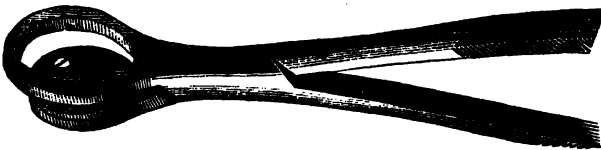
FIG. 214.



Aveling's polyp tome.

Removal may likewise be accomplished by the forceps of Nélaton, represented in Fig. 215, or by long-handled, curved scissors, by which as

FIG. 215.

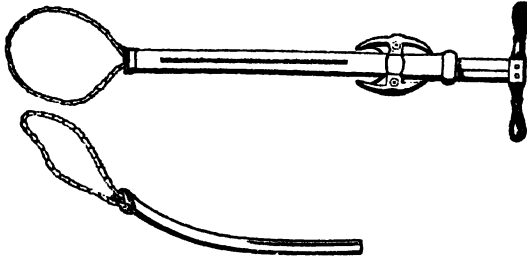


Nélaton's forceps.

much as can be got within their blades should be cut away. In this way, piece by piece, a large portion or the whole of the growth may be excised.

Écrasement.—In many cases in which excision may be practised, écrasement becomes possible and should be preferred. The operation consists in cutting off the mass, as near its attachment as possible, by the écraseur. This instrument, the invention of M. Chassaignac, of Paris, consists of a

FIG. 216.

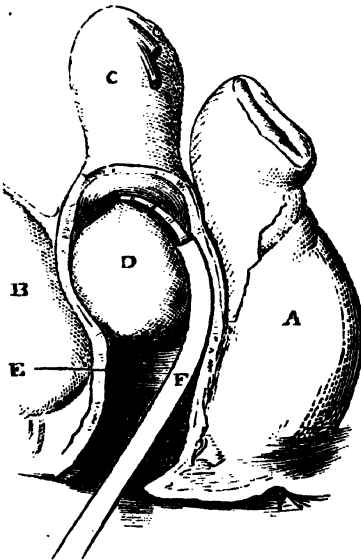


The écraseur, straight and curved.

flattened tube of steel which has two rods of the same metal passing through it to its upper extremity (Fig. 216). To the end of each of these

the extremity of a chain is attached. This is passed around the part to be cut off, and the rods are retracted by a ratchet movement at the other extremity. Steadily and slowly the chain tightens around the mass and cuts its way through it. The écraseur not only presents the great advantage of preventing hemorrhage, but experience proves that after its use inflammatory action is much less likely to occur than after that of cutting instruments. Should the tumor be small and have passed out of the uterus into the vagina, the chain of the écraseur may be passed over it as a noose, by the fingers. If it be small and inside the uterus, or if the tumor be of great size, whether in the vagina or uterus, it may be necessary first to pass a cord around it by means of canulæ, and in this way to draw in

FIG. 217.



The écraseur at work.

place the chain, which may be subsequently attached to the écraseur.

In many case the use of the écraseur is so difficult that it becomes ineffectual. Under these circumstances the wire rope écraseur of Dr. Braxton Hicks answers a most excellent purpose. Its constricting wire is stiff,

small, and manageable, and thus we may be able to ensnare a tumor which was unattainable by Chassaignac's instrument.

Should the tumor be very large and fill the vagina completely, there are two methods by which it may be entirely removed: 1st, it may be drawn down by obstetric forceps and delivered; 2d, it may be cut away, piece by piece, until its base be reached. By the first plan the uterus is temporarily inverted, the morbid growth removed by the knife, scissors, galvano-cautery, or *écraseur*, and the uterus replaced, after the stump, should it bleed, has been seared by the red-hot iron. Of these I greatly prefer the second, which I have often practised, and never with hemorrhage as a result.

Avulsion.—The cervix being dilated, the tumor is seized by vulsellum forceps and firm traction, with slight rotatory movement, made upon it. Under this tractile force its uterine attachments may be ruptured and the tumor come away. If it do not do so, the operator passes one hand into the vagina and two fingers into the uterus, by which he ruptures the attachments of the growth and thus frees it. Meantime the hand of an assistant is placed over the hypogastrium to steady and depress the uterus. Dr. West,¹ writing in 1864, says, "The forcible avulsion of polypi is a rough and hazardous proceeding, a relic of barbarous surgery."

Enucleation.—Where the attachments of the tumor are so extensive, or where it is so much embedded in the uterine parenchyma, as to render it impossible to practise upon it any of the procedures already described, the operation of enucleation offers itself as a most efficient and valuable resource. It has been stated that the attachment of submucous and even interstitial fibroids to the uterine wall is not firm, they being surrounded by a layer of loose cellular tissue. This fact suggested many years ago, to the mind of Velpeau, the possibility of enucleating them, and in 1840 M. Amussat put the theory into practice. At the same time that it must be regarded as a valuable resource in many difficult cases, it cannot be denied that it is one attended by great hazard, as it may be destructive to life by inducing exhaustion, hemorrhage, perforation of the uterus, pyæmia, or inflammation of the pelvic viscera. Dr. West reports twenty-eight cases in which it was performed, fourteen of which proved fatal.

"Peritonitis, phlebitis, and pyæmia," says Dr. West,¹ in estimating the prospects of success held out by enucleation, "the consequences of violence done to the uterus of women exhausted by large and frequently repeated floodings, are dangers from which but few have altogether escaped; under which I fear that correct statistics will show that most have succumbed." The dangers attending its performance should not deter the surgeon from resort to it in suitable cases which absolutely require aid. They should merely induce him to exhaust all palliative means before resorting to this.

¹ *Op. cit.*, Eng. ed., p. 305.

Enucleation may be practised by two methods: immediate, in which the fingers of the operator at one sitting accomplish the removal of the tumor; and gradual, in which the fingers of the operator merely inaugurate the process which contractions of the uterus are excited to complete.

If the first plan is to be pursued, the patient, after previous complete dilatation of the cervical canal, is placed upon her back upon a strong table, the legs being held by assistants. An assistant firmly depresses the uterus by pressure on the abdomen, and the operator, by means of a pair of scissors, guided by two fingers, cuts into the capsule. Into this opening he passes the index finger and fixes the tumor. By means of scissors or a probe-pointed bistoury a crucial incision is then made through the capsule as freely as circumstances will admit. Passing one hand cautiously into the vagina, and forcing the uterus towards the vulva by his other hand and that of an assistant, he now proceeds to peel back the capsule and gradually to enucleate the mass. Usually the desired result will be accomplished, and an artificial os thus offered for escape of the tumor from its capsule. If the vagina be not very dilatable, it had better be prepared for these manipulations by copious warm vaginal injections and gradual distention by water bags.

If the second plan¹ is decided upon, the os being dilated or incised, a long crucial incision is made over the presenting part of the tumor, the lips of the capsule separated by the finger, and the patient put upon the steady and systematic use of ergot, in the hope that the body of the tumor may present through this species of os, and be expelled by uterine efforts.

Production of Sloughing.—Baker Brown and others adopted for the removal of these growths plans for mutilating them, and thus establishing the process of sloughing by which, a partial liquefaction of their tissue being effected, they could be more readily discharged by uterine efforts or removed manually. I mention the plan only to inveigh against it in the strongest terms. It should be cast aside for the reasons that it is attended by very great dangers, and that much better ones are at our disposal.

Although these methods are, as I have stated, far in advance of strangulation by ligature, to all of them serious objections and deficiencies attach. Excision, from the fact that it is, except in the case of pediculated growths, difficult to reach the point of uterine attachment by knife, scissors, or polypotome, is often impracticable. Torsion can be applied only to pediculated tumors. Avulsion and enucleation are difficult of accomplishment, slow of performance, and so exhausting to the patient that she is in dan-

¹ An excellent *résumé* of this subject, including both the immediate and gradual forms of enucleation, will be found in the *Med. Times and Gaz.*, Aug. 1857, by Mr. J. Hutchinson. I mention this particularly because some more recent writers appear to regard this mode of dealing with fibroids as entirely new.

ger of sinking in consequence. *Écrasement* frequently fails to remove the entire growth, and leaves the uterine attachment to decompose and cause septicæmia. And the removal of uterine tumors by the establishment of the process of sloughing, insures so certainly, as has just been stated, the great dangers of septic poisoning, that this method should, in view of the fact that much safer ones are at our disposal, be now regarded as unwarrantable. Instead of the occurrence of sloughing being courted by the surgeon, it should in these cases be feared, and avoided by all the means by which he can oppose its development. One of the great objections to the use of ergot as a means of causing the enucleation or expulsion of large submucous growths is the tendency of the compressing influence of the uterine fibres to impair the nutrition of the neoplasm so completely as to produce its death and decomposition.

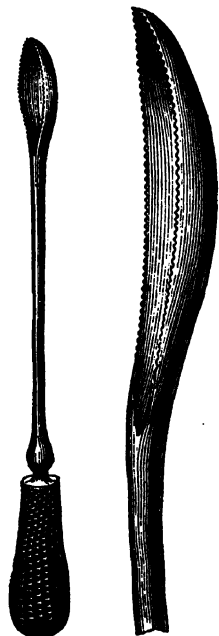
Dr. Emmet advocates very strongly the removal of fibroids projecting into the uterine cavity by firm traction, which he thinks causes the uterine parenchyma to expel the tumor in imitation of a natural process, and then cutting off the most prominent part attainable in the vagina by curved scissors. In this way he reports the successful removal of a number of large fibroids.

I now proceed to lay before the reader a plan which experience leads me to regard as superior to any of these, and which I believe will supersede them with all who are willing to give it a fair trial. This method consists in seizing the tumor at its most dependent and accessible point with strong vulsellum forceps, passing up along its sides the spoon-saw or serrated scoop depicted in Fig. 218, and by a gentle, pendulum motion from side to side sawing through the attachments of the tumor and freeing it entirely from its connections with the uterus.

This instrument consists of a steel spoon with a strong handle, twelve or thirteen inches long. The spoon itself is slightly convex upon its outer, and concave upon its inner surface, while its borders are serrated. The saw teeth are blunt and not slanted in either direction, but perpendicular. The outer convex surface protects the uterine wall entirely, while the inner and concave causes the instrument to hug the tumor and run along its surface as it cuts its way laterally and upwards.

The advantages which experience teaches me attach to this instrument are the following: 1st, the attachments of the tumor are separated by a saw, which greatly limits hemorrhage; 2d, the shape of the spoon, convex without and concave within,

Fig. 218.

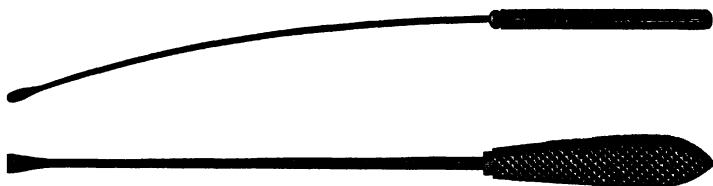


The spoon-saw.

causes it to follow of itself the contour of the tumor unless this be very lobulated, and protect the enveloping uterine tissues from injury; 3d, the highest points of attachment of the tumor are as readily reached as the lowest, the freed growth descending under traction as the saw severs its adhesions in successive sweeps around it; 4th, the saw action gives to the process of separation, whether the growth be interstitial or submucous, sessile or pediculated, rapidity and certainty; and 5th and last, though by no means least, the nature of the spoon-saw secures separation of a growth at the highest point of its attachment, leaving no peduncle to decompose.

Before endeavoring to remove a sessile uterine fibroid, it is always advantageous to learn as much as possible about the degree of its attachment. Not that even universal attachment should prevent the removal of the neoplasm by means of the spoon-saw, but because here as elsewhere "knowledge gives power," and creates confidence. I have, after trying various methods of doing this, settled upon the use of the flat, elastic whalebone sound, which is represented in Fig. 219.

FIG. 219.



Elastic flat whalebone probe.

The manner in which I came to employ this was the following: Going to the country to remove a submucous fibroid, I endeavored by means of Simpson's sound, Sims's probe, and my own round, elastic whalebone sound to discover the extent of attachment of the growth, but for some reason could not succeed. Taking then a flat piece of whalebone about six inches long, which one of the ladies present removed on the instant from her dress, I put a knob upon it by touching it repeatedly with melted sealing-wax, and I employed this with perfect success. This improvised sound I took away with me, and for a year or more employed it on similar occasions. After that I had one made artistically, which is represented in Fig. 219.

This sound is used in this way: The index finger of the left hand is placed on the most accessible part of the tumor; then the sound, held in the right hand, is slid up on one side between the tumor and the uterine wall until arrested, when the index of the left hand is placed upon its shaft at the os externum uteri. The sound being then withdrawn, and the finger kept upon it, it is laid upon a sheet of paper or against a black-board, and being curved, a line is drawn from its tip to the indicating

finger. Then the sound is passed on the other side, and a similar transfer of its course is made to the sheet or board.

In this way it is possible not only to approximate the truth, but to be wonderfully exact as to it. I have repeatedly demonstrated the efficiency of this sound to classes of students and to medical men, and I feel sure that it leaves nothing to be desired in reference to the determination of the degree of attachment of any uterine fibroid *which can be fully touched by the finger*. Without this possibility the method is unreliable.

There is no method by which I could so surely lay the claims of this instrument before the reader, and at the same time demonstrate its application, as that of reciting two average cases in which I have employed it; one a case of submucous and one of interstitial fibroid:—

CASE I.—In June, 1876, I was called by Dr. John Burke, of this city, to see with him Mrs. A., a lady forty-seven years of age, who had been for four years suffering from a very profuse menorrhagia and metrorrhagia. To such an extent had she been reduced by loss of blood that she was generally confined to her chamber, and suffered from œdema pedum, palpitation of the heart and dyspnœa upon the slightest exertion. Her appearance was that of one suffering from an exaggerated degree of anæmia, which was rapidly being aggravated by repeated and severe hemorrhages. The liver was found to be very much enlarged, as was likewise the spleen; the former, as we supposed, from fatty degeneration, the latter from malarial poisoning.

Mrs. A. had been examined repeatedly as to the uterine condition during this period, and twelve months before I saw her Dr. Burke had discovered the existence of a submucous uterine fibroid, supposed to be as large as the egg of a goose. At no time up to June, 1876, did he consider her in a condition fit to admit of an effort at the removal of this, but at that time he called me to decide whether it would not then be possible.

When I first saw her I found the uterus, by conjoined manipulation, as large as it would be in pregnancy at the fourth month, admitting a sound to a distance of five inches, and the tip of the index finger, when force was used, so that a hard, pyriform tumor could be touched in the uterine cavity.

The patient was so much exsanguinated, so much exhausted, and her nervous system so profoundly depressed, that I decided against operation, and she was fully sustained by diet and fresh air, in the hope that a few months would so improve her state as to render operation possible.

I saw her several times after this with Dr. Burke, but instead of getting better, she steadily grew worse, and in September general dropsy set in, affecting the peritoneum and the cellular tissue of the body. We now thought the case decided, and gave up all hope of removal of the uterine growth. In time, however, all the effused fluid disappeared, and about

the beginning of January she was so far restored that the question of operation was again agitated. On the 15th interference was decided upon, and on the 28th the tumor was detached and removed.

The following diagram represents the attachments of this tumor:—

It was free upon one wall only; attached throughout the other to within an inch of the os internum.

At midday, on the 28th of January, detachment and extraction were practised in the presence and with the assistance of Drs. Burke, Walker,

and Jones. The patient, being etherized, was placed in Sims's position, and his speculum was introduced. The cervix being then caught with the tenaculum, its lips were severed on each side, so as to open the way to the tumor, which could by the finger be felt above before this was done, but now could be quite freely manipulated. A powerful vulsellum forceps was then firmly fixed in the growth, and securely locked. Then, with the spoon-saw, the uterine attachments were rapidly and very easily severed.

I was equally surprised and pleased, as were also my assistants, at the rapidity, ease, and certainty with which the sawing motion given to this instrument by the right hand separated the tumor from the uterus, even at the fundus.

In a very few minutes I had succeeded in detaching and delivering a tumor which by methods which I have heretofore

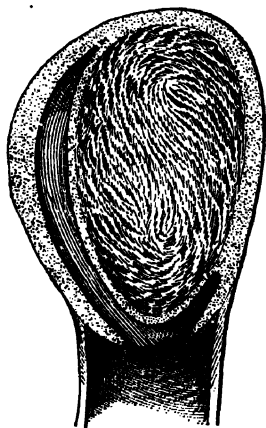
adopted would have taken, I think, at least a half hour. Indeed I must say that I believe that in the enfeebled state of the patient by no other method could it have been removed without great risk of fatal exhaustion.

The tumor weighed seven and a half ounces, and measured, in its long diameter, four inches, and in its short, three. It resembled in shape and size a large goose-egg, and was composed of the ordinary tissue which characterizes these myomata.

The patient entirely recovered, and is now enjoying good health.

CASE II.—Georgiana P., at. thirty-six years, who has been married fourteen years, and had one child twelve years ago, since which time conception has not occurred, was admitted to my service in the Woman's Hospital, Dec. 20, 1879. The patient was perfectly well until April, 1879, when, just after a menstrual period, she was suddenly seized with profuse uterine hemorrhage, accompanied by severe uterine tenesmus. This lasted only twenty-four hours, but it exhausted her very much indeed. At every menstrual epoch which has occurred since that time she has had profuse hemorrhage, with what she styles "bearing-down pains." This has lasted

FIG. 220.



Attachment of fibroid in Mrs. A.'s case.

usually about nine days. During the months of July and August she suffered very much from dysuria and rectal tenesmus. For the last four or five months before admission she had been almost entirely unable to walk, because locomotion created the "bearing-down pains" already alluded to. She declared that up to April, 1879, she was in excellent health. She was anæmic, very pale, and extremely weak. During the month of October, hemorrhage was so severe that a vaginal tampon had to be applied repeatedly to check the excessive discharge of blood.

Upon physical examination the uterus was found very large, the fundus extending up to a point midway between the umbilicus and ensiform cartilage. The cervical canal was distended so as to admit the tip of the index finger freely. The posterior uterine wall, including the cervix, was immensely hypertrophied, and out of all proportion to the anterior. The uterine cavity, measured by an elastic sound, was found to have a depth of nine and a half inches, the sound passing upwards and then inclining somewhat backwards towards the spinal column. The following diagram will convey a more correct idea to the mind of the reader than a much more lengthy description in words would accomplish.

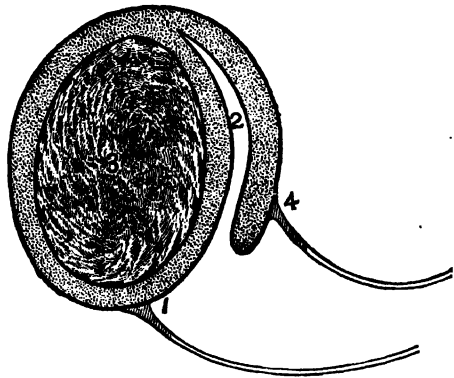
The patient, with her husband, had come from Colorado Springs, and was exceedingly desirous to have some curative treatment adopted, for experience had taught her the inutility of the treatment by ergot, preparations of lime, and the various other therapeutical resources which are ordinarily adopted in cases such as hers. Accordingly she was seen with me in consultation by a number of my colleagues of the hospital staff, before whose consideration I laid the operation which I shall now describe; and I was thoroughly sustained in the resort to it.

The propriety of the operation and the urgent demand for prompt action in this case were from the first quite clear to my mind, and at no time did

any doubts as to the justice of this conclusion present themselves. The reasons for my convictions were the following:—

1st. My experience with the spoon-saw in a large number of cases made me feel confident that success would crown my efforts as to the mere surgical part of the work.

FIG. 221.



Diagram, representing the tumor imbedded in the posterior wall of the uterus. 1 shows the projecting posterior wall; 2, the uterine cavity; 3, the tumor; 4, anterior uterine wall at the point of attachment of the anterior vaginal wall.

2d. The tumor, already large, was growing fast, and, in a few months, the abdomen would have had to be opened to give exit to it.

3d. The patient was losing large amounts of blood, and growing, of course, steadily weaker, and progressively more despondent.

4th. She lived in Colorado, far away from any surgical centre, and, if she were sent away now, it was highly improbable that, weakened by hemorrhage, discouraged by failure to obtain relief from surgery, and alarmed by the great and increasing size of the abdomen, she would ever again make an attempt to save her life. In the present I saw a courageous and comparatively strong and healthy woman, with a fairly good blood state, unimpaired nerve condition, efficient digestive function, and a tumor weighing two pounds, not willing merely, but eager for operation. In the future I foresaw an anæmic, feeble, and despondent one with impaired digestion, an exhausted nervous system, and a tumor weighing eight or ten pounds, still willing to submit to operation perhaps, but doing so with diminished hope and lessened enthusiasm.

On the 5th of January I proceeded to remove the tumor in the following manner, and in the presence of Prof. Alfred C. Post, and Drs. Emmet, C. C. Lee, J. B. Hunter, C. S. Ward, H. D. Nicoll, S. B. Jones, and the house staff of the hospital. The patient, having been etherized, was placed in Sims's position upon a strong table before a window admitting a good light. During the steps of the operation I was ably assisted by the assistant surgeons in my department, Drs. Ward and Nicoll. Sims's largest speculum having been introduced, and the perineum and posterior wall of the vagina lifted by it, I caught the uterine wall at the point marked by the figure 1 (Fig. 221), and, by means of a pair of long-handled scissors, snipped a piece out of it, extending deeply into its structure. Upon this a very free flow of blood occurred, but I disregarded it, and as I proceeded with the operation it very soon ceased. Keeping a strong tenaculum fixed in the uterine tissue between the figure 1 and the posterior vaginal walls, I now passed my right index finger into the opening which I had made, and in this way enlarged it somewhat. Then taking a very strong and large grooved director, I forced it upwards towards the figure 2, and sliding a knife in its groove, I slit the enveloping uterine wall high up into the uterine cavity. By the finger I now enlarged the opening thus made, and was at once gratified by the sight of the white fibrous structure of the tumor of which I was in search. Into this I at once fixed a powerful pair of vulsellum forceps, and taking the spoon-saw swept it around, and detached the tumor from its uterine bed for about an inch and a half or two inches all around.

I now made traction upon it with the vulsellum, but found that the tumor was too large to be dragged down into the pelvis. Taking, then, a pair of long-handled scissors, I cut out the portion of the tumor within the bite of the forceps, removing a piece about as large as a hen's egg.

Then seizing another portion of the tumor, I cut it out, and continuing in this way I removed, piecemeal, all that portion which I had detached by the spoon-saw.

I now seized the tumor again with the vulsellum forceps, and detaching, by means of the spoon-saw, about an inch and a half more of it, I removed it piecemeal by the scissors as already described. This process I repeated till about one-third of the tumor only remained, when I detached the entire mass with the spoon-saw, and drew it away.

The operation lasted one hour and twenty minutes. After the first incision it was accompanied by almost no hemorrhage, and the patient bore it remarkably well. At its conclusion the large cavity left by the removal of the tumor was syringed out with strongly carbolized water, and stuffed to its full capacity with carbolized cotton. The patient was put to bed; given a full dose of morphia hypodermically; kept very warm by the application of artificial heat; as soon as she could swallow, given brandy and water in small amounts at short intervals, and kept upon the general regimen usually adopted as preventive of shock.

I shall not weary the reader with a detailed account of the progress of the case; suffice it to say, that no bad symptoms developed themselves, and that just one month after the performance of the operation, the patient left the hospital for her home.

The tumor weighed exactly two pounds, and was a good example of the ordinary myo-fibroma. It must be remembered that its duration is unknown. True, it was discovered in April, 1879, but it is highly probable that it had existed long before that time.

At the conclusion of the operation, an eminent surgeon who was present remarked that he was surprised that I had depended so little upon the spoon-saw in its performance. My own feeling in regard to the matter is this: without the spoon-saw nothing would have induced me to touch this case; with it at my disposal, I would willingly undertake to cope with any number of similar ones. After having detached segment after segment of the lower portion of the tumor, dismemberment and removal of parts of it were easy. An attempt to excise and remove the growth before detachment would, I think, have very soon been followed by the filling of the vaginal canal with intestines.

I have now operated more than twenty times with the spoon-saw, and its efficiency becomes more and more apparent with increasing experience. At present I resort to no other means for removal of intra-uterine growths which are firm and large enough to admit of traction by the vulsellum forceps.

Laparotomy.—One of the great questions of the future in gynecology is to be not the propriety but the proper limitation of the operation of laparotomy for the removal of uterine fibroids, involving, as it very commonly does, the ablation of a part or the whole of the uterus. Indeed, no operator should undertake gastrotomy for a uterine fibroid without being pre-

pared, if necessary, to remove the uterus with the tumor, for the connection is often so intimate that a determination of the attachments of the tumor is out of the power of the most skilful diagnostician. Indeed, even after removal of the mass from the body, its relations to the uterus are often discovered only after patient and intelligent search. Dr. Farre tells of a specimen preserved in one of the London museums as a solid ovarian tumor which, upon careful examination, he proved to be uterine by tracing the Fallopian tubes into it. It was also in this way that the nature of a tumor removed by Dr. Storer was identified; Prof. Ellis, after a very minute examination, distinctly discovering the entrance of the tubes into the cavity of the body, and thus settling the matter.

I have said that the future would concern "not the propriety" of the operation of uterine extirpation for fibroids, for, although all conservative men must condemn the reckless resort to the operation, which is sometimes practised at present, all progressive men should, I think, be agreed that under certain circumstances it is not only an admissible but a necessary procedure. The point of difference should be, to-day, not the legitimacy but the indications for the operation.

"Seeing the results of the operation in this country," says Emmet, "no surgeon is justified in attempting to remove the uterus for the growth of a fibrous tumor except as a forlorn hope." "At present," says Barnes, "there is little ground for enthusiastic advocacy of the practice. The case may best be summed up by stating that the question is *ad hoc sub judice*." These two eminent gynecologists may be said to reflect the general conservative sentiment of the profession. And yet this adverse inclination in the professional mind is no more marked than it was a quarter of a century ago with reference to ovariectomy, the crowning glory of gynecological surgery. It must be remembered, on the one hand, that many cases in which removal of a large fibroid, which has involved the ablation of the whole uterus, have recovered, and it must be appreciated, on the other, that the surgeon who refuses the chances of operation to one who is failing from the existence of a uterine fibroid, should pause when he reflects that a tumor, the removal of which appears to be exceedingly difficult, may prove upon experiment to be extremely easy. Two cases of my own will illustrate this remark. Fifteen years ago Prof. F. N. Otis brought to me for consultation a patient who had a very large uterine fibroid, and I decided against the advisability of operation. In time the patient died, and a colossal tumor was found unattached in the abdomen, connected with the uterus by a small pedicle, which could easily have been severed. Five months ago a Swedish woman presented herself in my service in the Woman's Hospital with an abdominal tumor, weighing about fifty pounds, which had undoubtedly existed for twenty-three years. Of this fact we had positive proof, apart from her own statement. I felt inclined to regard the tumor as a uterine fibro-cyst, and operated with the belief that I should

have to remove the whole uterus. The tumor proved to be ovarian, and the patient rapidly recovered.

The warmest advocate of uterine ablation for fibroids has been M. Péan, the celebrated surgeon of Paris. In 1873 he published statistics, which will soon be cited, and made the following declarations: "Amputation of the supra-vaginal portion of the uterus is not an operation of much graver character than extirpation of ovarian cysts complicated by adhesions." . . . "Ablation of the uterus is a perfectly justifiable operation, which the surgeon is as much warranted in undertaking under certain circumstances as ovariectomy." At that time he reported nine operations, with seven recoveries, and yet during the past seven years no further report has emanated from him.

Statistics.—No reliable statistical report on the subject exists, so far as my knowledge goes, so that I shall have to content myself with fragmentary evidence.

Péan ¹	collected	44	cases, of which	14	recovered and	30
Pozzi ²	"	119	"	"	42	" " 77
Boinet	"	46	"	"	12	" " 34
A. Leblond ³	"	12	"	"	8	" " 4
Storer ⁴	"	24	"	"	6	" " 18
Thomas ⁵	"	12	"	"	1	" " 11
Schroeder ⁶	"	108	"	"	30	" " 78

Of Schroeder's cases, 73 with removal of the uterus gave 55 deaths and 18 recoveries ($24\frac{6}{100}$ per cent.); while 35 operations, without removal of the uterus, gave 23 deaths and 12 recoveries ($34\frac{3}{10}$ per cent.)

It would not be safe to generalize from all these cases, for without doubt many of the same cases have entered into the calculations of several authorities. Having at hand no better material, I present this in its crude state.

Let us remember that antiseptic surgery has just dawned upon science, and let us hope that the statistics of the future will show a great advance over those of the past.

Supported by such statistical evidence, it is certainly not venturing too much to say, that, if a fibroid be pedunculated and unattached, its removal is not much more dangerous than the ordinary operation of ovariectomy was a few years ago; that, if it be completely amalgamated with the uterus, or so bound to neighboring parts that removal proves very difficult, the operation may be abandoned, the patient having, without great risk, availed herself of the only chance of cure; and that, even if the removal of the tumor involve that of the uterus and ovaries, we may

¹ Hystérotomie, par J. Péan et L. Urdy, Paris, 1873.

² Pozzi, Thèse d'agrégation, 1875.

³ Traité Elem. de Chirurg. Gynecol., Paris, 1878.

⁴ Successful Removal of Womb and both Ovaries, 1866.

⁵ Dis. of Women, 1874.

⁶ Dis. of Female Sexual Organs.

still indulge in a fair hope of saving our patient. Surely, when ablation of the entire uterus, as an addendum to the Cæsarean section and as a remedy for cancer, is winning the position of a warrantable procedure by reason of the success attending it, he who allows death to occur from uterine fibroids without offering his patient the chance of safety possible from gastrotomy, is assuming a responsibility far greater than that which would attend an honest and well directed effort to save life.

The same arguments which can be urged in favor of ovariectomy do not, however, apply to this procedure. Ovarian tumors almost always run a rapid course toward death; fibroid tumors do so only exceptionally. The former are not ameliorated by the menopause; the latter are usually greatly benefited by it.

The accidents which have generally produced a fatal termination in cases of gastrotomy are as follows:—

- 1st, Primary or secondary shock or collapse;
- 2d. Hemorrhage;
- 3d. Peritonitis;
- 4th. Septicæmia.

We are now possessed of means for limiting the first; the improved methods of hemostasis at our command diminish the danger of the second; and the knowledge of the fact that antiseptic surgery markedly diminishes the probability of the occurrence of the third and fourth, will in future aid in avoiding them.

Methods of Removal.—I shall now proceed to describe three operative procedures, the first that of Péan; the second that of Schroeder; and the third my own.

Péan's Operation.—This is divided into three stages. The first one consists in making an abdominal incision through the median line, extending downwards to one inch above the symphysis pubis, and upwards towards the umbilicus as short a distance as is compatible with exposure of the surface of the tumor.

Second Stage.—If any fluid exist in the tumor it should be evacuated by puncture by a trocar or canula. If it be small enough, either before or after this, to be drawn through an abdominal opening of moderate size, this should be done, and the operator may at once proceed to the third stage. If it be solid and too large to be drawn out, it should be removed piecemeal in the following manner. By means of a long, curved needle, two or three strong wires are carried deeply into the tumor and tightly twisted, so as to constrict the vessels, and the intervening mass is cut away. Then another portion is similarly treated until the tumor is small enough to be drawn out. Adhesions are then carefully tied and broken, and the tumor is delivered.

Third Stage.—The tumor being held up by one assistant, while another closes the abdominal wound to prevent escape of the intestines; the uterus

is penetrated by the long, curved needle near the os internum, or even lower if the tumor extend downwards; wires are drawn into place; the two halves of the cervix are compressed by twisting them; the tumor is cut off; and the pedicle thus formed is fixed in the wound.

The wound is then closed, and the pedicle, which is kept in the abdominal wound by means of the instruments by which the wires were twisted, is treated as after ovariectomy.

*Schroeder's Operation.*¹—The abdominal incision having been made in the median line, and the uterus and tumor exposed to view, a needle is passed at the os internum and strong ligatures applied. This cuts off the blood supply to the tumor, which is cut to pieces as we would cut a melon and removed. The incision by which the uterus is removed is wedge-shaped, and the edges of the wound are approximated by deep and artificial sutures, so that the opposing edges of the peritoneum come into contact, and the stump thus arranged is dropped into the peritoneum. Schroeder has operated for tumors of the uterus six times, with five recoveries. German operators seem to be pretty uniformly agreed that return of the pedicle to the abdominal cavity and complete closure of this is an essential to a successful system in this operation. The validity of this position is, however, by no means proved. Very surely, the external treatment of the pedicle does not invalidate the perfect practice of Lister's antiseptic methods where proper precautions are used in renewal of the dressings.

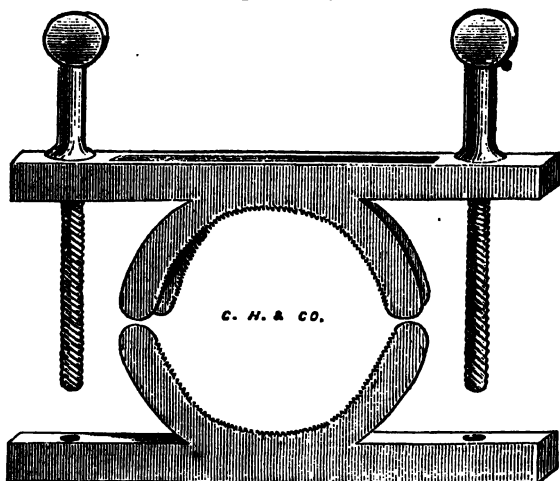
Thomas's Operation.—The abdominal walls are incised as for ovariectomy, and all cystic formations emptied by the trocar and canula. The lowest portion of the tumor is then manipulated so that a strong cord, a piece of cod line, for example, is passed under it. By this the pelvic extremity of the tumor is lifted so that one limb of the clamp, shown in Figs. 222 and 223, which measures nine and a half inches in length, can be passed under it. The second limb of the clamp is then screwed to the first, the tumor cut through, the severed end of it drawn down by vulsella, and, the entrance of blood to the peritoneal cavity being prevented by stuffing napkins under and around the bleeding surface, the mass is diminished in size by the knife, and removed as rapidly as possible. The pedicle is then examined, and, if it be found practicable, a second clamp is placed lower down, the first removed, and additional tissue cut away above the lower one. The clamp is kept in place during the progress of the case as after ovariectomy.

Should this manœuvre be found to be impossible from the great bulk of the lower segment of the tumor, the incision is prolonged to such an extent that the tumor can be delivered with a certain degree of force. Two assistants then lift it as high in the air as possible, and the attachment of the bladder to the tumor being examined by a catheter, the former is detached from the latter if this be found necessary. As near to the vaginal

¹ Amer. Journ. Obstet., Jan. 1879.

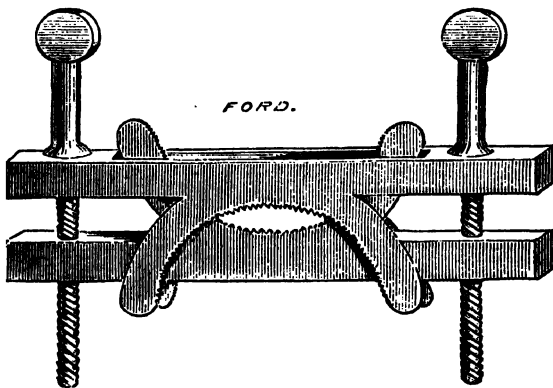
junction as it can be placed, the large clamp is then applied and screwed so firmly as to control hemorrhage.

FIG. 222.



Thomas's clamp, open.

FIG. 223.



Thomas's clamp, closed.

By this means the portion of the tumor which is to be used as a pedicle is compressed, and as far as possible diminished in bulk. The tumor and as much of the uterus as is above the clamp is now cut off. The clamp is thus far used as the main hemostatic agent; but it is not to be thus employed permanently. Three or four steel knitting needles are now passed through the tissue just above the clamp, at right angles, so as to support the part after the clamp is loosened. Then by large cautery irons the tissue above clamp and needles is thoroughly charred. This is the permanent hemostatic power upon which dependence is placed, and to render it reliable the whole-inch of pedicle above the clamp should be completely charred. The

clamp is now loosened, the ordinary antiseptic dressing applied, and the patient put to bed and closely watched for evidences of hemorrhage or shock. The first should be met by tightening the screws of the clamp; the second by hypodermic injections of morphia, brandy, and ether, and by warmth to the entire body, and especially to the soles of the feet and palms of the hands.

I have now removed the uterus, in whole or in great part, on account of tumors seven times, with four recoveries and three deaths. In no case was the operation one of election; in every case it was a matter of necessity, the patients in every instance having the choice between uterine extirpation and death.

These operations, like all others in abdominal surgery, should, with the light which we at present have upon the subject, be performed under the antiseptic method.

On the twelfth or fourteenth day the clamp may be cautiously removed. During the last two months I have twice removed the entire uterus by this method, with the recovery of both patients.

Oöphorectomy.—Extirpation of the ovaries, castration, Battey's operation, has been now repeatedly performed for the premature induction of the menopause, for the control of the exhausting hemorrhage which so commonly marks these cases.

The operation has been performed for the fulfilment of this indication, where uterine tumors have existed, as follows:—

Hegar ¹	has operated	12 times,	with	9 recoveries	and	3 deaths.
Freund,	"	3	"	2	"	" 1 "
Goodell	"	1	"	0	"	" 1 "
Mann	"	1	"	0	"	" 1 "
Total number of cases,		17	"	11	"	" 6 "

Hegar, whose experience with the operation is greater than that of any other authority, regards its efficacy in very large fibroids as doubtful.

CHAPTER XXXV.

CYSTO-FIBROMATA, OR FIBRO-CYSTIC TUMORS OF THE UTERUS.

Definition, Synonyms, and Frequency.—The form of compound uterine tumor which we are now considering has been described by different authors under the names of cysto-fibroma, cysto-sarcoma, cysto-myoma, cystoid and fibro-cystic tumor.

¹ See, with reference to this subject, a paper by Dr. Mann, *Archiv of Med.*, vol. iv. No. 1, Feb. 1880.

Our knowledge of these tumors is but recently acquired, and is even now exceedingly elementary. In two of its most important aspects, diagnosis and differentiation from other forms of abdominal tumor, we have been very deficient, and from this have resulted frequent and serious errors. Considerable attention is, however, being now directed to the subject, and already we are possessed of means which were wanting*only a few years ago for arriving at correct and certain conclusions concerning them.

Cysts may develop in connection with the uterus in two entirely different ways: first, a cyst may grow and become very large, being enveloped by a layer of uterine tissue; second, solid tumors of the uterus, whether benign or malignant, may undergo cystic degeneration, that is to say, within the structure of a solid tumor cysts may develop, which, distending the spaces in which they first form, gradually increase in size, and it may be in number, until what was formerly a solid growth becomes in certain parts filled with fluid. Thus we may have cysto-sarcoma, cysto-fibroma, cysto-chondroma, or cysto-carcinoma.

It must not be supposed that this variety of tumor compares in frequency with the simple fibroid, or that cystic degeneration often affects that. It is not a matter of very common occurrence, but it is certainly sufficiently common to demand especial consideration at the hands of the gynecologist. As has been the case too with many other affections, as soon as special attention has been directed to it, it has been found to be much more frequent in occurrence than was previously supposed. Up to the year 1869, Kœberlé¹ tells us that only fourteen cases had been recorded, of which two were discovered post mortem. Dr. C. C. Lee,² however, in that year, collected the reports of nineteen cases, nine in this country, eight in England, and two in France. Dr. E. R. Peaslee,³ writing in 1872, says, "I have myself met with ten cases in the last two years, and have seen not less than fifty since my first operation of ovariectomy in 1850."

Pathology.—Pathologists describe a variety of methods by which spaces may be created within fibroid tumors, which, subsequently becoming lined by a fluid-secreting membrane, are filled with serous, sero-sanguinolent, or colloid material. "Within some fibroid tumors," says Klob,⁴ "cavities may be found, which may have occurred in several ways. They either result from a dropsical condition, or the connective tissue of the tumor undergoes colloid metamorphosis (mucous degeneration), commencing at the centre of the tumor, and in consequence of which its substance liquefies into an albumino-serous fluid. Finally, hemorrhages into the substance of a tumor may lead to the formation of cavities similar to the so-called 'apoplectic cysts.'" In speaking of neoplastic cysts, Billroth⁵ says, "These

¹ Gazette Hebdom., No. 16, 1869.

² Remarks upon Diagnosis of Ovarian from Fibro-Cystic Tumors.

³ Ovarian Tumors, p. 107.

⁴ Op. cit.

⁵ Op. cit., p. 621.

result mostly from softening of tissue previously diseased by cell-infiltration, or a firm tumor substance. As soon as the new formation has separated into sac and fluid contents, in some cases a secretion from the inner wall of the sac begins, so that the softening cyst becomes a secretion or exudation cyst, and thus grows. Any tissue rich in cells may be transformed into a cyst by mucous metamorphosis of the protoplasm, or, as others express it, by separation of the mucous substance through cells without any connection with development of mucous glands." He then goes on to liken the process by which fluid spaces are created in chondromata and fibromata to the formation of the joints in the limbs of the fœtus by mucous softening of the cartilage tissue, of which the bones of the limbs are formed. Furthermore he declares, that "the often slit-shaped, smooth-walled cysts with serous, or sero-mucous contents which occur in uterine myomata, are possibly enormously dilated lymph spaces," a view which was first advanced by Cruveilhier.

It will be seen that the term cystic degeneration is rather loosely applied to this affection, for the fluid collections taking place are rather results of liquefaction than of true cyst development. Nevertheless I shall adhere to its use.

Cystic degeneration affects submucous or interstitial fibroids much less frequently than those which are subserous. The following case reported by Dr. Sims, which he considers one of this degeneration in a submucous fibroid, is worthy of citation. It is described by him in these words: "I passed a trocar into it at its lowest point, and in the direction of its long axis, and there were discharged more than twenty ounces of a colored serum. The puncture was enlarged for two inches to prevent its closing. There was at once a sensible diminution in the size and tension of the abdomen. The discharge kept up for some time; and this, together with occasional injections into the very fundus of the uterus, with the liquor ferri persulphatis, diluted with three or four parts of water, arrested very promptly the hemorrhages, and the patient was dismissed in two months in a very comfortable condition, and with strength enough to walk six or eight miles."

As the records of cases of fibro-cystic tumors are not very commonly met with in the literature of this subject, I shall make reference to a few of them. Kiwisch¹ described one which filled the whole pelvic cavity, and extended as high as the ensiform cartilage. It took its rise from the posterior uterine wall; had as its base a fibroid tumor the size of the head, which was enveloped in uterine substance; and weighed forty-six pounds. Cruveilhier² mentions a similar one. Spencer Wells³ speaks of two cases. In one the tumor was connected with the right side of the fundus by a

¹ Quoted by Klob, *op. cit.*, p. 182.

² Klob, *op. cit.*, p. 182.

³ *Diseases of Ovaries*, p. 354.

broad band; its solid portion weighed sixteen pounds; its fluid portion twenty-six; and a semifluid material four pounds. The uterus was twice its natural size. In the other there were two tumors, both of which had a uterine attachment, and consisted of solid and fluid elements. A very striking instance of this affection I saw submitted to operation by Dr. James L. Little of this city. The tumor, which yielded very obscure fluctuation, filled the entire abdominal cavity, and was composed of a network of fibrous tissue; constituting spaces varying in size from that of an apple to that of a cocoanut, which were filled with colloid material. This growth sprung from the neck of the uterus. It took its origin from the post-cervical wall, and the tumor growing from this pedicle filled the whole abdominal cavity, and was before operation regarded as ovarian.

Symptoms.—Fibro-cystic tumors do not vary in symptoms from sub-peritoneal fibroid growths of equal size. Like them they produce—

Displacements of the uterus;

Pressure on rectum and bladder;

Menorrhagia in some cases.

Physical Signs.—The uterus is usually found to be enlarged from excess of nutrition resulting from the formative irritation due to the propinquity and connections of the tumor, and to be elevated and lie in front of it. The sensation yielded by bimanual manipulation and by palpation is not that of a hard, solid, and resisting mass, but an obscurely fluctuating sensation is discovered. It is common in such cases to find a certain number of examiners inclining to the theory of fluidity, and others to that of solidity in the growth. If an explorative tapping be practised by the hypodermic syringe, a very small amount of fluid, which is usually viscid or turbid, will be withdrawn from some places, while no fluid whatever will appear from others, and if a trocar or a large needle of the aspirator be employed a quart or two of thick straw-colored fluid may be drawn off, leaving, usually, solid elements remaining. In rare cases of large uterine cysts the sac may be entirely emptied, and even these signs be wanting.

Differentiation.—Many competent authorities have declared that the diagnosis of this form of tumor and its differentiation from ovarian cyst is impossible. Kœberlé says, “the diagnosis of fibro-cystic tumors has, up to the present time, been declared impossible by almost every author,” and Baker Brown acknowledges that he knows of “no distinguishing marks between the two.” Even after incision Spencer Wells declares that he knows of nothing but a darker hue of the sac-wall to put the operator on his guard. The result of this difficulty is illustrated by the fact that out of Lee’s nineteen cases eighteen were operated on under a mistaken diagnosis of ovarian cyst.

The conditions with which this form of tumor will most likely be confounded are—

Pregnancy ;
Fibroid tumor of the uterus ;
Ovarian cyst.

From the first it may be known by absence of the gastric and mammary symptoms of that condition, by menstruation not only continuing but perhaps showing a tendency to increase in amount and frequency, by absence of fœtal movements and heart sounds, and by the duration of the tumor beyond nine months.

From fibroid tumor it may be known by its yielding obscure fluctuation, its assuming usually larger proportions, its more rapid growth, and, beyond everything else, by its yielding fluid to the exploring trocar.

From ovarian cyst diagnosis is usually difficult and often impossible; the chief grounds upon which it will always depend, and upon which it may sometimes be made, are the following:—

Shape and density of the tumor ;
 Its connection with the uterus ;
 The depth of the uterus ;
 The rapidity of growth and effect on health ;
 The effects of tapping ;
 The characters of the fluid withdrawn ;
 The elevated position of the uterus in the pelvis.

There are other differential signs, but these are the really reliable ones. A great array of symptoms often confuses rather than helps the inexperienced diagnostician, and I wish to analyze the subject here as it should be analyzed at the bedside.

When a differential diagnosis is arrived at, it is ordinarily done in the following way:—

1st. The examiner in palpating has been struck by the fact that the surface of the tumor which he supposes to be ovarian is peculiarly irregular and resisting to the touch, and that fluctuation is obscurely yielded in certain places only. This renders him suspicious, and he determines to investigate fully before committing himself to the diagnosis of ovarian tumor which at first suggested itself.

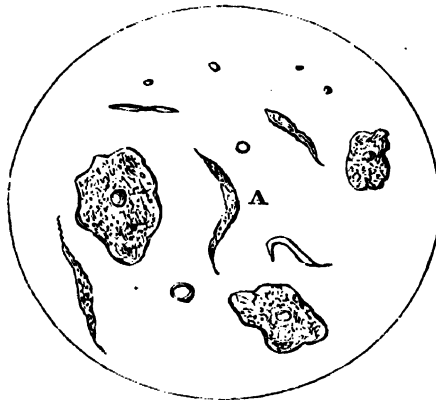
2d. He now examines the uterus and finds that the sound proves it to be much deeper than normal; that as he rotates this organ upon the sound it appears united to the tumor; that posteriorly to the uterus the tumor seems to join it and grow from it; and that as an assistant lifts, depresses, and rolls the tumor, the uterus moves distinctly. His suspicions are strengthened.

3d. He now questions the patient more closely, finds that she is over thirty, fibro-cystic tumors rarely appear before thirty, and that this tumor has been slowly but steadily growing for four or five years without materially impairing her health. He feels the necessity for further information, and resorts to removal of the fluid by the aspirator or trocar.

4th. The fluid which pours away is transparent and straw-colored, and as it ceases to flow he discovers that the sac only in part collapses. Testing the matter, he finds that this is not due to the existence of other cysts, but that solid elements prevent collapse.

5th. He now examines the fluid withdrawn, and finds that it coagulates spontaneously as well as under heat. The whole contents of the tube give a large coagulum like that of the blood clot in consistence though not in color. Placed under the microscope, a peculiar fibre cell may be discovered which is characteristic, according to Dr. Atlee, of the fluid of fibro-cystic and not of ovarian tumors. It is a product derived from the tissue in which the cyst forms itself, the muscular tissue of the uterus.

FIG. 224.



The fibre cell (A) characteristic of fibro-cystic tumors. (Atlee.)

6th. Anxious now to test as completely as possible the relation of tumor and uterus, he practises the method of Hegar and Schultz. The patient is anæsthetized and laid upon the back; one assistant pulls the cervix down by means of a tenaculum, and another seizes the tumor and alternately lifts and depresses it, while the examiner, by means of two fingers carried high up the rectum, seeks to find out how intimate is the relation of uterus and tumor.

Even from this apparently copious supply of diagnostic means in many cases only a doubtful conclusion can be drawn, for every one of them is often fallacious in typical cases, and always so in large cysts unaccompanied by any fibrous structure except that constituting their walls. The tumor may not be irregular nor hard; it may develop with great rapidity; the uterus may not increase in depth, may move independently of the tumor; and tapping may empty it. On the other hand, cases of true ovarian tumor are not rarely met with in which the uterus is increased in depth, the tumor and uterus move synchronously under slight impulse, tapping only partially empties the sac, leaving solid masses remaining, and

the growth of the tumor is slow and has little influence upon the general health. The late Dr. W. L. Atlee¹ most truly remarked, that "no amount of experience will avail the surgeon in making a differential diagnosis by the ordinary methods of examination." "But," said that eminent ovariologist in alluding to his past errors of diagnosis, "such errors need not be repeated." He believed that we had arrived at a period when, by means of the fibre cell, diagnosis becomes at once simple and positive. Should the diagnostic method which he has furnished us bear the test of experience, a most important result will indeed have been attained. Dr. Atlee relies upon the physical properties of the fluid withdrawn from these sacs for diagnosis of their origin, whether uterine, ovarian, or of the broad ligaments. The characters of fibro-cystic fluid are these. It is transparent, of a deep amber color, and very thin when first drawn, but forms a hard and firm coagulum in a little while, which in a few hours shrinks and separates into a clot and a thin watery serum. It coagulates by heat, and resembles in every respect the *liquor sanguinis*. Under the microscope few cells appear in it. There are epithelium, oil globules, and a fibre cell, represented at A in Fig. 224. This is characteristic of the structure in which the cyst originated.

Course, Duration, and Termination.—This form of tumor runs a very slow course. Much graver and more rapid in development than the pure fibroid, it develops more slowly than ovarian cyst. I had recently under observation two very large tumors supposed to be of this kind. One of them had existed for eleven years, and yet the patient still performed the functions of nurse in a hospital. It is true that her abdomen was immensely distended, and that she moved about with difficulty, but thus far she had not been completely incapacitated. In the second case the tumor had existed for about five years. It was quite large, when the patient, after an attack of illness which was supposed by her physician to be peritonitis, began to improve, and is now reported to me as being better than she has been for many years.

Although this is the slow course of the affection in some cases, in others it exhausts the patient by constitutional irritation, the result of mechanical interference with other organs; menorrhagia; and deprivation of exercise and fresh air.

Prognosis.—The prognosis is unfavorable. Relief by medication is in the present state of therapeutics unattainable, and the operation of laparotomy is much less promising when performed for uterine than for ovarian tumors.

Treatment.—Nothing more need be stated in reference to this subject than has been already said in connection with uterine fibroids, and will be said in speaking of ovariectomy.

¹ Ovarian Tumors, p. 263.

CHAPTER XXXVI.

UTERINE POLYPI.

Definition.—A uterine polypus is a tumor covered by the mucous membrane of the uterus, attached to that organ by a pedicle or stem, and originating in a hypertrophy or hyperplasia of some of its proper tissues. Portions of placenta, the fibrinous remains of blood clots, and parts of the foetal envelopes, sometimes remain in utero, and take upon themselves the shape and develop the symptoms of true polypi. They might, with justice, be described as pseudo-polypi, but the true polypus originates in morbid growth of the tissues of the organ from which it springs, and it retards progress in pathology to confound these conditions with that to which this chapter is devoted.

History.—While so many uterine disorders of great obscurity are described by the earliest medical writers, this, the diagnosis of which is often so self-evident and positive, attracted little attention. Hippocrates, Celsus, Galen, and even Aëtius make no mention of it. By Moschion it was described in the third century, and called pulps or polypus, but it was certainly neither well understood nor treated in his time, and we get no clear accounts of it until the revival of this branch of learning by the French School in the seventeenth century. Then Guillemeau, and subsequently Levret, threw much light upon it, and in the latter part of the eighteenth and beginning of the nineteenth centuries many others contributed to place our knowledge upon its present basis.

Varieties.—The student will meet with much difficulty in arriving at definite ideas concerning the varieties of uterine polypi. Almost all authors differ in their classification, and the number of names which have at various times been applied to them is too large even for repetition. Let it be borne in mind that, since these tumors are formed by excessive development of one of the tissues existing in the uterus, there are but three elements which can give rise to them: the muscular tissue; the connective tissue; or the glands of the organ. It is true that by some a species of vascular polypus formed from development of the bloodvessels, a species of telangiectasis, has been described, but it is probable that this is only a form of the cellular or mucous variety. All classifications of these growths are to a great extent arbitrary, and hence in the present state of pathology none can become universal. That which I shall adopt is this:—

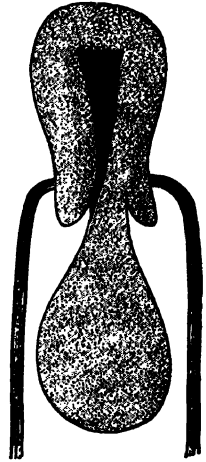
- 1st. Cellular polypi;
- 2d. Glandular “
- 3d. Fibrous “

These varieties are subject to morbid changes which create other forms; as, for example, fatty, calcareous, and malignant polypi. Colombat refers to a large, hollow polypus which, when removed, leads the operator at first to fear that he has mistaken an inverted uterus for a polypus. He states that Richerand and Jules Cloquet were once thus deceived, until the subsequent death of the patient enabled them to correct their error by post-mortem inspection. Mme. Boivin represents one of this character, in Plate 19 of her work. She calls it a hollow polypus; declares that, before its removal by M. Dubois, it was regarded as inversion by several physicians, and accounts for it by supposing that some plastic element had coated the uterus and been ripped off, except at its cervical attachment, and had become inverted by menstrual fluid collected above. Some years ago Dr. Henschel presented to the New York Obstetrical Society a hollow polypus which was attached to the cervix by three points. It was referred to Dr. Noeggerath for examination and report, and his method of accounting for it was similar to that of Mme. Boivin in the case just mentioned.

Pathological Anatomy.—The cellular polypus is a tumor, generally of pear shape, varying in size from a marble to a hen's egg. It is covered over by mucous membrane, and consists within of connective tissue in a state of hypertrophy or hypergenesis. Its attachment is generally, though not always, to one wall of the cervix, and in its structure there appears a certain amount of cervical fibrous tissue. Sometimes the pedicle of this variety is very long and slender, so that it hangs outside of the vulva.

The glandular polypus consists in hypertrophy of the Nabothian glands, or, according to Dr. Farre, of the utricular follicles. Several follicles are enlarged, and, being bound together by connective tissue, make up a tumor of pediculated form. It may arise either from the cervix or body, but very generally grows from the former, and is commonly gregarious, a large number of very small ones often studding the walls of the cervical canal. The most remarkable instance of this variety with which I have ever met is that represented in Fig. 226. The whole growth measured in length $4\frac{1}{2}$ inches, and in longest diameter $2\frac{7}{8}$ inches. It filled the vagina completely, grew from the inner wall and lip of the cervix, caused no symptom except leucorrhœa and pelvic neuralgia, and was not known to exist until difficulty in sexual intercourse caused the patient to apply for examination. The mass was examined after removal by Dr. F. Delafield, and found to consist of enlarged cervical follicles, the grape-like masses shown in the diagram, which was copied from nature by Dr. J. B. Hunter, bound

FIG. 225.



Cellular polypus.

together by connective tissue. I removed it with great ease by the écraseur.

The fibrous polypus is a submucous fibroid, resembling closely those which are subserous and interstitial. Slowly extruded from the uterine parenchyma by its contraction, the tumor gradually acquires a pedicle and becomes the form of polypus under consideration. Fibrous polypi usually arise from the body of the uterus, though they are sometimes attached to the rim of the os.

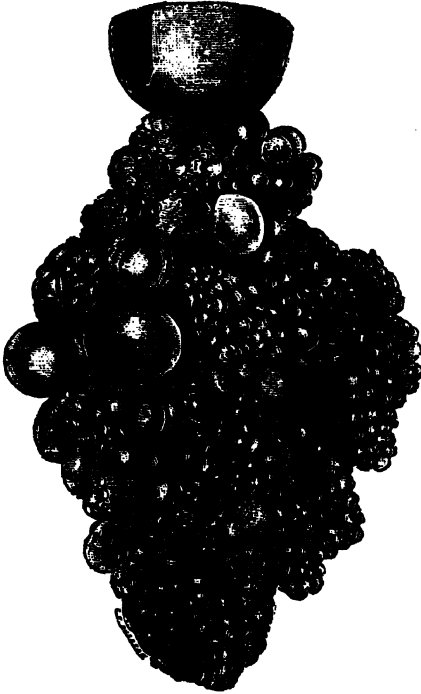
Causes.—Any chronic inflammatory action, any obstruction to escape of menstrual blood which causes uterine tenesmus, or any influence tending to keep up uterine congestion, will predispose to hypergenesis of the elements of the mucous membrane. But as for fibroids, so for fibrous polypi, no positive cause is known.

Symptoms.—Polypi occasion two classes of symptoms; one dependent upon the congestion which their presence excites, the other upon the mechanical obstruction which they offer to the escape of menstrual blood. These two influences result in the following signs:—

Leucorrhœa;
Pain in back and loins;
Menorrhagia;
Metrorrhagia;
Hydorrhœa;
Dysmenorrhœa.

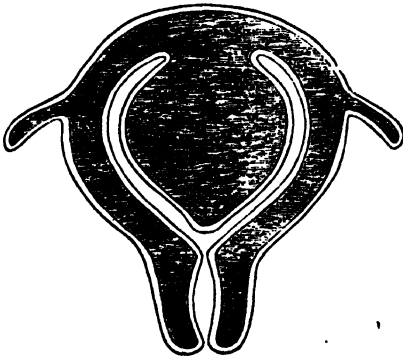
The last of these is not a frequent sign, but sometimes presents itself prominently, as it did in the following case, which occurred before we understood the use of tents as we do at present. A lady came from a distance to put herself under Dr. Metcalfe's care for dysmenor-

FIG. 226.



Glandular polypus.

FIG. 227.



A submucous fibroid being gradually transformed into a fibrous polypus.

rhœa, characterized by severe tenesmus and expulsion of clots. These symptoms had lasted for years, and had resulted in emaciation, and great nervousness and irritability. In time she came under my care, was treated by me for nearly a year, and went home unrelieved. At her next menstrual period she sent for the physician of the neighborhood, who examined by touch, detected in the vagina a small polypus which hung by a stem from the uterus, and twisted it off, to her complete and permanent relief. This had been at last expelled after having rested upon the os internum, and acted as a ball valve for years. The uterus had been repeatedly examined before, but nothing could be discovered.

Physical Signs.—These will depend in great degree upon the size and location of the growth. Should it be in the cavity of the body, and small, no signs will be afforded by the touch or speculum, and the uterine sound will give no evidence of its presence. The cavity will be discovered to be much congested, and a copious flow of blood will often follow the withdrawal of the instrument. Should the tumor be large, the uterus will often be found to be displaced, and increased in size, and the cervix somewhat dilated. Should the attachment of the tumor be cervical, it can often be felt hanging from the canal or in the os uteri. But no examination for uterine polypi can be considered complete until the cervix has been fully dilated by tents, and careful exploration been made by touch. Even then small growths will sometimes escape research.

By any other means than dilatation and touch it is often very difficult to determine whether a small neoplasm exist in utero or not. This statement, the history of the following cases which have occurred in my practice very recently, will illustrate:—

Miss B., a spinster, aged thirty-eight years, had suffered from profuse menorrhagia and metrorrhagia for three years, and upon examination I found the uterus enlarged and measuring internally four inches. I made the diagnosis of intra-uterine neoplasm, dilated with tupelo tents, and found only fungosities to exist.

Mrs. M., aged thirty-seven years, married thirteen years, sterile, suffering from marked dysmenorrhœa, was submitted to the operation of bilateral tracheotomy, on account of constriction and tortuosity of the neck, which rendered the introduction of the sound almost impossible. On the tenth day after the operation hemorrhage occurred, and upon examination I found a hard, fibrous polypus as large as a pigeon's egg presenting at the os, which I very readily removed.

Differentiation.—Polypi must be differentiated from fibrous tumors even after the discovery of an intra-uterine growth has been made. The symptoms to which these affections give rise are very similar, and it is by physical means alone that differentiation can be effected. These means are the use of tents, the sound, and touch. By them, the mobility of the

tumor, the point of its attachment, and the breadth of its base, may usually all be determined.

Course and Termination.—Nature may cure a uterine polypus by ejecting the mass with so much force as to fracture its attachment and disconnect it from the uterus; or calcification, fatty degeneration, ulceration, or sloughing may occur. But none of these results can be looked for with any confidence. In the majority of instances, without surgical interference, steadily advancing anæmia ultimately destroys life.

Prognosis.—The prognosis is generally good; depending, of course, upon the possibility of removal.

Complications.—Polypi, if so small as not to greatly increase the weight of the uterus, create but two complications, leucorrhœa and metrorrhagia, which may go on to the production of fatal anæmia. If they be so large as to increase the size and weight of the uterus, displacements, with their attendant irritation of rectum and bladder, may show themselves, and even inversion has been known to occur.

Treatment.—This may be either palliative or curative, and it is as necessary for the practitioner to familiarize himself with one as with the other plan. Many a patient suffering from intra-corporeal polypus has had life cut short by intemperate efforts at its removal, who by a systematic and patient course of palliative treatment might not only have lived for years but have ended her disease by expelling the tumor into the vagina and rendering it accessible to safe removal. There are few men of large experience, who cannot recall such instances of the unfortunate results of injudicious practice, either in their own experience or that of others. The dictum of Gooch that, “when hemorrhages from the uterus arise from a polypus, medicines are useless. The only effectual way to cure the hemorrhages is to remove the polypus,” is undeniably sound. Lives have, however, been sacrificed to just such a style of assertion both in this and other diseases. When the young practitioner reads the brilliant record of an os dilated, an instrument carried to the fundus, a tumor removed, and a case of metrorrhagia cured, he feels almost culpable if he have a case under treatment and do not follow a similar course, and as he sees his patient's pale face every day demanding a cure, he is often hurried into a resolve to run every risk to effect one. But he who is familiar with this kind of practice knows that it in reality involves many dangers, and that successful cases have a proneness for creeping into literature which does not characterize fatal issues.

I would be distinctly understood, as not undervaluing the practice of dilating the cervix and removing intra-corporeal polypi by instruments carried to the fundus. I merely desire to insist upon the fact that such a course is necessarily dangerous; that it should be undertaken only after careful consideration; and that its proper performance requires skill and experience.

Whenever it is practicable to do so, all manipulation should be delayed until expulsion of the tumor into the vagina is accomplished; but, unfortunately, operative procedure is often called for before this can be effected. Then the operator has no choice. He is forced to proceed to removal of the growth even at a disadvantage and at a risk to his patient. If the os internum be fully dilated, the opening of the external os will not prove difficult of accomplishment. Slitting the neck or dilating it will usually be sufficient to bring the growth within reach of a tenaculum which will draw it forth. But where both are to be opened danger is involved in the process, for not only are we called upon to assume that connected with and dependent upon the use of tents: we have to do so in a pathological condition peculiarly liable to be complicated by endometritis and pelvic peritonitis. I have seen several deaths due to these efforts, and I always inaugurate them with a certain amount of anxiety.

Palliative Treatment.—As I have said a great deal in connection with the treatment of submucous fibroids, which would have to be repeated here if I went into the detailed consideration of this subject, I shall limit myself to a concise recapitulation.

1st. Replace the uterus if it be displaced, and keep it in position by means of an appropriate pessary, at the same time that all pressure is taken from the fundus by avoidance of tight clothing and all violent muscular efforts, and by the use of skirt and abdominal supporters.

2d. Keep the patient in bed at menstrual periods, urging her to avoid warm drinks, and to use cold and acid ones. Give viscum album, cannabis indica, opium, gallic acid, ergot, or elixir of vitriol freely during the periods. After a menstrual epoch has lasted four or five days, use a tampon saturated with solution of alum or tannin, removing it immediately if there be any evidence of regurgitation through the tubes.

3d. Keep the bowels regular, and avoid fatigue and over-exertion at all times.

4th. Repair the damage done to the blood by nutritious food, and that done to the nervous system by bitter tonics and nervines, avoiding the use of iron and quinine, which increase the tendency to hemorrhage.

5th. During the inter-menstrual periods give ergot freely, to favor extrusion of the growth.

Curative Treatment.—There are three positions in which a polypus may be found: above the contracted os internum, above the contracted os externum, or in the vagina. The first position presents the gravest difficulties in the management of these cases, the second presents much less serious difficulties, while the third may, with our present appliances, be almost said to present none.

If it be discovered that the cervical canal has been dilated by the weight and wedge-like action of the polypus aided by uterine contraction; the walls of the cervix may be slit on each side nearly to the vaginal

junction, and a tenaculum or vulsellum fixed in the tumor by which it may be drawn out of the uterus. Or by means of tents the resisting os may be dilated so as to admit the smallest size of Molesworth's dilator, and by this further expansion may be effected. After this, if the tumor can be seized, it may be drawn out, or ergot in full doses may be given to cause its expulsion. If it be found necessary to seek the pedicle at or near the fundus, it may be severed by the same means which we adopt in case the tumor hang in the vagina, namely—

- Excision ;
- Torsion and traction ;
- Ecrasement ;
- The galvano-caustic wire ;
- The spoon-saw.

Should the pedicle be within reach of knife or scissors, it may be divided; or if higher in the uterus, the polyp tome (Fig. 228) may be employed. Should the growths be so small as not to be susceptible of seizure, they may be scraped from their attachment by a large steel curette; and should they be small and possess slender pedicles, they may be seized with forceps and twisted off. Should they be so small and slippery as to defeat this plan, or should they be numerous, or return very soon after removal, the cervix should be slightly dilated, cleansed of mucus and blood, and thoroughly painted over by fuming nitric acid, as recommended by Dr. Lombe Athill in disease of the lining membrane.

FIG. 228.



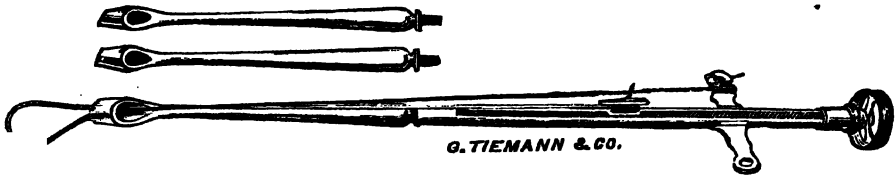
Simpson's polyp tome.

The ligature, once so popular, should never be employed; the tardiness of its action, and the fetid discharge which it excites, rendering it objectionable and dangerous. Ecrasement constitutes sometimes a safe and expeditious operation. Sometimes, however, great difficulty attends the encircling of the tumor by the chain of the instrument. To effect this, it is often necessary to encircle the mass first by means of a ligature passed by Gooch's canulæ, and then to draw the chain into position by tying it to the end of this, as represented in the chapter on fibroids. Under these circumstances Hicks's wire rope écraseur (Fig. 229) constitutes an excellent substitute. The polyp tome of Simpson or that of Aveling often answers a good purpose in these cases.

When the polypus is of hard, fibrous character, and fills the uterus so completely that the pedicle cannot be reached, those portions which are within reach may be cut away piecemeal by Nélaton's forceps, constructed

for this purpose, or by ordinary curved scissors. Dr. Gooch long ago announced that when a ligature was applied around one of these growths, that part above as well as below its constriction often died. It is with a hope of such a result that we make use of this means. I have, however,

FIG. 229.



Hicks's wire rope écraseur.

cut through the centre of a fibrous polypus and found the attached portion continue to flourish as before operation.

When a large fibrous polypus presents its pedicle in such a way that it can be encircled by the galvano-caustic wire, this instrument may be employed. It not only cuts without the application of force through the hardest tissue, but, being brought to a white heat by the electric current which passes through it, it sears the open vessels, checks hemorrhage, and prevents septicæmia.

I have deemed it my duty to place before the reader all the methods at our disposal for the removal of these neoplasms, that he may exercise his choice as to a selection. In my own practice I have given them all up for the spoon-saw, which is fully described under the head of uterine fibroids. A very small spoon-saw will readily pass through a partially dilated os internum and without difficulty slip up to the attachment of the polypus and sever it without the creation of hemorrhage, while it is kept in a state of tension by traction upon its most dependent part by the vulsellum forceps.

Should a very large fibrous polypus have escaped from the uterine cavity in whole or in part, the lowest portions should be cut away by scissors, and the tumor delivered piecemeal.

In conclusion, I offer a *résumé* of the methods of treatment recommended in this chapter.

1st. If a polypus exist in utero and the cervical canal be firmly closed, avoid immediate attempts at its removal unless the symptoms be so grave as to make that course advisable. Temporize by employing palliative means until dilatation of the cervix and perhaps expulsion of the growth into the vagina are effected.

2d. To facilitate expulsion, dilate by tents or incise the walls of the cervix laterally and use ergot steadily, either internally or hypodermically.

3d. If the os internum be fully dilated, remove the polypus at once, for

the operation is one attended by little danger even if the cervix requires incision.

4th. If the cervix be dilated and the tumor be in utero, seize it with a vulsellum at its lowest extremity, and make a cautious but rapid attempt at its removal by torsion and traction. Lengthy manipulations carried on in utero are always very hazardous.

5th. If it cannot be removed in this way, slide up along the wall of the tumor, upon which steady traction is made, the spoon-saw, sever the stem, and deliver the growth.

CHAPTER XXXVII.

SARCOMA AND ADENOMA OF THE UTERUS.

History.—Scattered through medical literature may be found descriptions of a tumor growing from the cavity of the uterus, which appears to occupy a middle ground between myo-fibroma on the one hand and true cancer on the other. Presenting in many respects the ordinary physical aspects of benign fibroid growths in their early periods, these tumors demonstrate a marked tendency to return after ablation. Even after repeated and thorough removal, they again and again recur, and in many cases their real character is in this way discovered. Another peculiar and dangerous characteristic, which marks their difference from benign fibroids, consists in their tendency to throw out fungoid growths, which show a marked tendency to undergo molecular death and disappear by ulceration, which process saps the vital forces of the patient by repeated and prolonged hemorrhages, and by opening the mouths of absorbent vessels for the entrance of septic elements into the blood.

The clinical features of such growths will be found recorded in English literature by Callender,¹ Hutchinson,² Oldham,³ and West,⁴ to whose interesting accounts the reader is referred. Of course pathologists were struck by these two facts in connection with such tumors: first, their marked tendency to return after ablation, and second, the absence of micrographic evidences of cancer in pathological developments showing many of the features of malignancy. Paget grouped them under three heads, malignant fibrous tumors, recurrent fibroids, and myeloid tumors, while Lebert described them under the name of fibro-plastic tumors, and Rokitsansky under that of fasciculated cancer. Not until the time of

¹ Pathological Transactions, vol. ix.

² Ibid., vol. viii.

³ Wilks, Pathological Anatomy, p. 404.

⁴ Op. cit., art. Recurrent Fibroid.

Virchow were they described under the old and previously loosely applied term of sarcoma. This pathologist clearly defined the disease and placed it in a distinct class, apart from developments somewhat similar in clinical features, but some of which were entirely benign and others truly cancerous.

Definition, Frequency, and Synonyms.—"Sarcoma," says Virchow, "is for me a production easily definable. I mean by it a growth the tissue of which, following the general group, belongs to the connective tissue series, and which is distinguishable from marked varieties of the groups of connective tissues only by the predominant development of cellular elements."¹ They possess, he declares, the characters of incomplete, rudimentary, or embryonic development, and not those of perfect tissue. This peculiarity existing in the original tumor becomes more and more marked as recurrence takes place after successive removals.

Were I to draw my deductions from my own experience, I would say that sarcoma of the uterus was not very rare. Many cases which have been regarded as cancer, and not a few of supposed fatal fibroid tumor or polypus, have been unquestionably of this affection. Virchow,² however, expresses a different opinion. "The production of sarcoma on the mucous lining of the uterus," says he, "is often spoken of, and even in his first work Lebert describes a fibro-plastic polypus. Nevertheless, from my observation sarcoma is very rare at this point, and the majority of tumors described as such are of a simply hyperplastic nature. True sarcoma, however, does originate in the uterine mucous membrane in medullary form difficult of recognition, often very soft, and with round cells, sometimes with all the characteristics of myo-sarcoma; the tissue may become in places more compact, and may form larger masses, and attain a degree of firmness so great that I have seen the best diagnosticians deceived as to the nature of the affection, and take it for a fibroid." Before my attention was especially called to this subject, I confounded such cases with medullary cancer. Since that time I have met with many cases which, both from clinical and microscopic evidence, I am forced to regard as sarcomatous developments. None were confounded with simple hyperplastic growths, as Virchow suggests, for all ended fatally.

Pathology.—Pathologists have commonly confounded sarcoma of the uterus with cancer. The reasons for this are probably these: after the former begins to ulcerate, it resembles the latter in many clinical features, both have a marked tendency to return, and they sometimes unite in the same tumor. The time has certainly arrived, however, when they should be separated both clinically and pathologically.

¹ *Pathol. des Tumeurs*, par R. Virchow, traduit par P. Aronsohn, vol. ii. p. 173.

² *Op. cit.*, vol. ii. p. 344.

Of late years uterine sarcoma, as a disease apart from cancer, has received careful study in Germany, excellent reports of cases being furnished by Ahlfield, Hegar, Winckel, Gussow, Spiegelberg, and others.

Unlike myo-fibromata, sarcomatous tumors have no capsules, but are immediately connected with the uterine connective tissue. Virchow declares that, "in accordance with their density, sarcomata may be, like all morbid tissues, divided into two groups: soft and hard sarcomata." As the disease consists merely in a multiplication of normal cells, homologous to the tissue in which it develops, and subject to no other disorder than hypertrophy, it is characterized by one of the cells typical of the connective tissue group. Thus we may have spindle, round, and stellate celled sarcoma, the second being the most frequent, and the first the rarest in the uterus. In some cases the cells are so large as to cause the name "giant-celled" to be given to the growth. "We may," says Virchow, "divide all sarcomata, and not simply those rich in cells, into two groups: the one with large, and the other with small cells." These cells are merely exaggerated reproductions of those of the mother tissue, and "behave like cells of parenchyma, not like surface cells (epithelium, cancer)," which are heteroplastic to the mother tissue. Between these cells the intercellular substance is always preserved, while in cancer we find cells of epithelial type pressed closely together in alveoli formed of trabeculae created by connective tissue.

Sarcoma, usually primary, is sometimes engrafted upon myo-fibroma by the process styled metaplasia, and a true sarcomatous tumor may itself be affected by cancer. Sarcomata into which a great deal of fibrous tissue enters are dense, like myo-fibroma, and Hegar¹ admits a transition form, a fibro- and myo-sarcoma. Schroeder gives an illustration representing a sarcomatous polypus growing from a carcinomatous cervix.

Virchow divides all sarcomata into hard and soft in a general way, and then gives a great many subdivisions, as fibro-sarcoma, myxo-sarcoma, glio-sarcoma, melano-sarcoma, chondro-sarcoma, and osteo-sarcoma.

These growths are so rich in vessels that Virchow declares that this feature is characteristic of them. To this vascularity is due their tendency to give forth a watery flow, to bleed freely, and to absorb septic materials.

Clinically, uterine sarcoma presents itself under two forms, which are often very distinct from each other, and yet between which in many cases an absolute line cannot be drawn. These are the hard and diffuse forms. In the one case a dense, solid, tense, and elastic tissue is presented to the touch, the chief anatomical character of which is the existence of fusiform cells. In the other a diffuse, a fungous-like structure is found, which is characterized by small round cells. When the parenchyma of the uterus is affected by the hard variety, pain, according to my experience, is very

¹ Archiv für Gynäkologie, ii. 1871.

severe. When a purely diffuse, endometrial form of the disease exists, there is very often none. The second variety will sometimes fill and distend the uterus to a great degree. The growth being removed by the curette, the patient greatly improves, but very soon the uterus refills and operative procedure is again called for. I have known patients live very comfortably for years through the relief afforded by this course, ultimately dying, however, of the continually returning affection.

Causes.—With reference especially to uterine sarcoma, little can with positiveness be said on this point. Virchow alludes, in speaking of sarcoma in general, to injuries, youth and old age, primitive debility in the part affected, inflammations, etc.; but whether uterine sarcoma has ever been traced to these I do not know.

Symptoms.—These may be thus presented:—

- Pain;
- Menorrhagia or metrorrhagia;
- Offensive mucous discharge;
- Pinkish watery discharge;
- Discharge of shreds or portions of the tumor;
- Pressure on rectum and bladder;
- Uterine tenesmus;
- Constitutional depreciation.

Gusserow declares that pain is constant and early, but Hegar denies this. My experience would lead me to indorse the opinion of the latter, though I have seen it very severe.

Physical Signs.—These will depend to a certain degree upon the individual peculiarities of the case. Sarcoma usually develops in the cavity of the uterus. One case has been reported by Veit in which the cervix was primarily affected, two by Kunert, and I have now under my care an unquestionable case of fibro-sarcoma having this origin. The growth usually arises from the uterine wall by a broad base and projects into the cavity. In time, uterine contractions dilate the cervix, and a portion of the mass is forced through the os.

In rare cases sarcoma assumes a polypoid form, and in others, coincidently with the uterine development, an extra-uterine growth projects into Douglas's pouch or one iliac fossa. Another way in which sarcoma affects the uterus is by diffuse infiltration into one or both walls. This may affect mucous or submucous tissues alone, or even the muscular structure itself. This surface soon ulcerates and gives forth a fetid discharge. In some cases this diffuse infiltration may affect the whole uterus, giving it the appearance of symmetrical enlargement.

If the tumor can be touched, it is usually found to be soft, spongy, and friable, though in some cases it is hard and firm like myo-fibroma. By conjoined manipulation the uterus is found to be large and usually irregular in shape as if the seat of fibroid tumors. The uterine sound indicates

enlargement of this organ. It is very common for the cervix to be dilated and portions of the mass to be expelled.

Differentiation.—Although these symptoms and physical signs will strongly point to the existence of sarcoma, the microscope alone will distinguish it from cancer, myo-fibroma, and simple hyperplastic growths.

Course, Duration, and Termination.—It runs a much slower course than true cancer; a much more serious one than fibroids and hyperplastic growths. In rare cases it terminates rapidly, but it has frequently been known to last for five or six years. The patient gradually sinks under the following morbid influences: hemorrhage, septicæmia, spread of the disease to neighboring abdominal viscera, disturbance of nutrition, or peritonitis.

Prognosis.—This is invariably unfavorable; a fatal issue is a question merely of time, whether the growth be removed or left uninterfered with.

The microscope, to a certain extent, aids us in predicting the probable rapidity of the affection. The more nearly it approaches a hard growth, the preponderating element of which is fibrous tissue, the slower will be its course; the more it partakes of a soft character and shows itself rich in cellular elements, the more rapid will be its progress in molecular death. Again, the small-celled varieties show a more marked tendency to rapidity of production than those which are characterized by large cells.

Treatment.—If the cervix be dilated, and a sessile growth be discovered in the uterine cavity, it should be entirely removed by the spoon-saw, galvano-cautery, écrasement, or the large curette, and the base of the growth thoroughly cauterized with chemically pure nitric acid. If the cervix be not dilated, this may be accomplished by the use of tents, and the disease attacked by the surgical means recommended.

Should the disease affect the parenchyma, and not especially the endometrium, the propriety of uterine ablation should certainly be considered. The fact that this disease is much less liable to return after removal than cancer would recommend it more strongly than in that disorder; and if sarcoma were confined to the uterus, the prospect of success from operation would be far greater.

Adenoma of the Uterus.—The lining membrane of the uterus, in addition to sarcoma, cancer, benign fungosities, and polypoid tumors, is sometimes the seat of adenoma, a disease consisting of hypertrophy of its glandular structure.

This affection develops the same symptoms as the others just mentioned, chief among which is hemorrhage. The diagnosis is established by exposure of a portion of the diseased tissue, removed by the curette, to the microscope.

The treatment of adenoma consists in entire removal by the curette, after dilatation of the cervical canal, and the application to the surface, from which it has been scraped, of fuming nitric acid.

It has a marked tendency to return, though much less so than sarcoma and cancer. This fact should teach us, however, the lesson that in dealing with it the entire endometrium should be thoroughly scraped in order to prevent the rapid generation of some remaining portion of the growth.

I have seen but one unquestionable case of this disease, and in this the curette during a period of four or five years was used very thoroughly fourteen times, compound tincture of iodine and nitric acid having been repeatedly applied after its use. After that the patient entirely recovered, and has now remained well for a number of years.

The growths removed in this case were examined repeatedly by Dr. F. Delafield, who for some time feared malignancy, but finally decided that they were of the character mentioned above.

Very recently I have seen a case with Dr. Moller, upon which, during seven years, he has repeatedly employed the curette for an abundant and steadily recurring growth. A portion of it, being examined by Dr. W. H. Welch, the pathologist of the Woman's Hospital, was pronounced to be a mixture of sarcoma and adenoma.

CHAPTER XXXVIII.

CANCER OF THE UTERUS.

Definition.—Between cancer of the uterus and the same affection in other parts of the system there are no marked differences. As in other organs, it may be defined as a disease which is characterized by great proliferation of connective tissue, excessive generation of cells of epithelial type, and marked tendency to extension to neighboring parts, to molecular death, and to return after removal. Waldeyer¹ concisely defines cancer as “an atypical epithelial neoplasm.”

History.—M. Becquerel asserts that, “in spite of its great frequency, cancer of the uterus is not a disease of which the history has been long known.” That it was not understood as we understand it to-day, is most true; but the ancients surely had a certain degree of knowledge concerning its clinical features. Hippocrates—*de Morbis Mulierum*—describes it at length, declaring it to be incurable. Archigenes wrote a chapter upon it, describing the ulcerated and non-ulcerated forms and the peculiarities of the discharges. His article is preserved by Aëtius, who entitles it, “*De Cancris Uteri*,” and is copied verbatim by Paul of Ægina without the slightest acknowledgment. The Arabians likewise were familiar with

¹ Billroth, Surg. Pathol., Am. ed.

it, Alsaharavius, Haly Abbas, and Rhazes all alluding to its prognosis and treatment in a manner which leads us to believe that they understood its true nature.

Upon the revival of gynecology in France, the disease was confounded with fibrous tumors and areolar hyperplasia. Astruc described "scirrhus" as the result of abortion, in 1766, and the confusion which attached to his description extended long after him. It characterized the times of Récamier and Lisfranc, and even so late as our own period we see the view endorsed by Ashwell, Montgomery, Duparcque, and many others. Blatin and Nivet,¹ in expressing their belief that scirrhus results from chronic inflammation of the parenchyma, append the following footnote: "Paul of Ægina, Galen, Andral, Broussais, Breschet and Ferrus, Piorry, Bouillaud, etc., place scirrhus among the terminations of chronic inflammation; some of them, however, admit the existence of a predisposition." Although it was known to the physicians of the most ancient times, we are indebted to them for little in connection with it, except portions of the imperfect nomenclature which now attaches to it. It is beyond question that within the last half century much more has been accomplished for the thorough understanding of the subject than ever has been done at any former time, and yet, even now, much doubt and uncertainty exist as to its varieties, and its pathological characteristics.

Pathology.—With regard to the pathology of cancer the views of pathologists have, of late, undergone considerable modification. Formerly, the prevailing opinion was that it was always the local manifestation of a general blood state. At present, opinion is divided; many still adhering to the old view, while others are yielding to the cogent reasoning of those who regard it as originally a local affection, one of the most striking features of which is a tendency rapidly to intoxicate the system. In an exceedingly able and interesting discussion upon this subject before the London Pathological Society in March, 1874, the former of these views was maintained by Messrs. De Morgan, Hutchinson, Moxon, Arnott, and others; the latter by Sir James Paget, Sir W. Jenner, Dr. Greenhow, and others. So equally was the society divided in opinion that a commentator remarks that "in point of numbers the constitutionalists almost equalled the localists."

Whatever be the peculiar state which gives rise to cancerous deposit, it is certain that any form of the affection may arise from one and the same disorder. This is proved by the facts that several deposits of different varieties may coincidentally exist, that one form may change into another, and that one being removed by surgical means a different one may replace it.

As there is doubt as to the origin of cancer, so is there as to the method

¹ Mal. des Femmes, Paris, 1842.

in which the local deposit takes place. Certain pathologists, of whom M. Robin, of Paris, may be taken as a representative, believe that, under the influence of a constitutional vice, which exerts a baneful influence over nutrition and formation, a fluid blastema is transmitted from the blood into the connective tissue of the part. From this molecules arrange themselves and form the anatomical elements of cancer. Another party, of which Virchow was the founder, maintains that the proliferation of connective tissue and hypergenesis of cells both arise from repeated subdivision of connective tissue corpuscles. These go, some to creation of tissue, some to filling brood-spaces, and others to formation of epithelium. Still another party, headed by Remak and Waldeyer, hold that all cancerous disease in the uterus takes its origin from the epithelium lining glands which dip into the parenchyma. The cancer cells are due to perverted action of normal epithelial production, while the stroma comes from proliferation of the interstitial substance or connective tissue of the part. "Only Thiersch, and recently Waldeyer," says Billroth, "maintain, as I do, the strict boundary between epithelial and connective tissue cells. . . . I only call those tumors true carcinomata which have a formation similar to that of true epithelial glands (not the lymphatic glands), and whose cells are mostly actual derivatives from true epithelium."

If the cervix uteri has been first affected, the disease spreads from this point, invades the whole neck, and sometimes the body of the uterus, the ovaries, vagina, bladder, and intermediate tissue. Even the bones of the pelvis may be attacked. For a varying length of time the deposition goes on, then without assignable cause the lowly organized mass begins to die, and ulceration or molecular death occurs. The detritus gives rise to a fetid, ichorous, and bloody discharge, which excoriates the vulva and thighs, and renders the patient disagreeable to herself and all around her.

The disease extends to neighboring and distant organs by several methods: first, by continuous growth; second, by absorption of contagious fluid or cell elements from the cancer by the lymphatics and transmission to the glands and other parts; and third, by venous absorption.

*Varieties.*¹—Cancer may attack the uterus in any one of the following forms:—

- 1st. Scirrhus; fibrous, or chronic cancer;
- 2d. Encephaloid; or acute cancer;
- 3d. Epithelioma; canceroid, or epithelial cancer.

In addition to the varieties of cancer thus far recorded, a fourth, the colloid, is often mentioned. It is now very generally regarded as incor-

¹ Although to be systematic I have deemed it best to adopt these conventional terms, the student must not imagine that it is always an easy matter to classify a uterine cancer under one of them. Very commonly a growth will be met with, which occupies a middle ground between these varieties, and is neither pure scirrhus, encephaloid, nor yet epithelioma.

rect to look upon this as a true variety of cancer, for it is rather a mucoid degeneration of one of the preceding varieties. The same kind of degeneration may affect other growths; and, if the mere presence of colloid matter were used as the test of malignancy, many errors would result. Virchow declares in reference to this important point, "you may, therefore, say colloid cancer, colloid sarcoma, colloid fibroma. Here colloid means nothing more than jelly-like." When this change has affected one of the other varieties of cancer, the alveoli are found very large and filled with jelly-like, structureless material.

Cancerous and canceroid affections should not, with the light which we at present possess, be separated. In both we find the characteristics of malignancy, and the microscope shows the same type of cell and connective tissue structure. It is certain too, that the physical aspects of the varieties of cancer depend merely upon varying proportions and anatomical arrangement of their component parts. Before proceeding then to the details of this subject let me premise this fact, that all the affections to be here treated of, whether they be called cancer, canceroid, or epithelioma, are really malignant in character, and differ as to malignancy only in degree; and that in all, if allowed to proceed uninterfered with, systemic intoxication is only a question of time.

Frequency.—Cancer is an affection of frequent occurrence, and is more frequently seen in the uterus than in any other organ. According to Rokitsansky,¹ the following average scale may be adopted as representing the preference of cancer for various organs. "First, the uterus, the female breast, the stomach, the large intestines, and especially the rectum; next comes cancer of the lymphatic glands," etc. The following quotations will fully display the relative frequency of cancer of the uterus:—

Of all cases of cancer in females, the uterus is affected in $\frac{3}{4}$, Kiwisch. ²							
" 9118	"	"	"	"	was	"	2996, Tanchou. ³
" 8746	"	"	"	"	"	"	3000, Simpson. ⁴
" 5122	"	"	"	"	"	"	113, Wagner. ⁵

Statistics prove that cancer is nearly three times more frequent in women than in men, and more than three times more frequently met with in the uterus than in any other organ of the female.

Relative Frequency of the Varieties.—Virchow⁶ regards canceroid affections as constituting the majority of so-called uterine cancers. Hewitt⁷ declares that "the form of cancer usually witnessed in the uterus is the medullary cancer. The 'epithelial' comes next in order of frequency."

¹ Sydenham Trans., vol. i. p. 198, Am. ed.

² Klob, op. cit., p. 205.

³ Rech. sur les Tumeurs du Sein, p. 218.

⁴ Clin. Lect., p. 42.

⁵ New York Med. Journ., vol. ix. p. 561.

⁶ Lusk's résumé, N. Y. Med. Journ., Sept. 1869, p. 567.

⁷ Op. cit., p. 575.

Courty¹ begins his remarks upon this subject thus: "Epithelioma of the vaginal portion of the neck, perhaps the most frequent of uterine cancers," etc.

So rare is it to meet with the scirrhus form of uterine cancer that some writers have doubted its existence. Rokitansky admits the possibility of its occurrence, but regards it as extremely uncommon. The reason of this is the fact that scirrhus is probably the earliest form assumed by the disease, and at this period few symptoms showing themselves, no examination is sought by either physician or patient. I have met with several undoubted instances of it; to the history of one of which I shall make allusion.

Dr. Treskatis brought to my clinique at the College of Physicians and Surgeons a woman between forty and fifty years of age who had been for some time suffering from leucorrhœa and menorrhagia. Upon examination by touch, I found the cervix very large and exceedingly hard and resisting. The speculum revealed no abrasion, except two little points about the size of pin-heads, which bled freely when brushed with a sponge. From the facts that the patient had shown no previous symptoms of uterine disease which could have resulted in areolar hyperplasia, that there was no intrauterine cause for menorrhagia discoverable, and that the hardness of the neck was excessive, I ventured upon the diagnosis of scirrhus cancer. This case was kept under observation by Dr. Treskatis, who subsequently reported that it had fully developed itself into an unquestionable one of carcinoma, as evidenced by softening, ulceration, the microscopic signs, etc. Klob² maintains that the disease "in the majority of cases occurs in a fibrous medullary form, that is, in the rare cases in which we are enabled to recognize and study the primary condition of the carcinomatous growth in the dead body, we find that form which is described under the name of fibrous carcinoma or scirrhus, whilst in those cases in which the disease proves fatal we generally meet with the distinct medullary variety of carcinoma."

After the first or hard and fibrous stage of the disease has lasted for some time, prolific generation of cells occurs. These fill the alveolar spaces in the framework of connective tissue, which spaces burst and communicate with each other, and the whole mass grows large and soft. After still greater growth, these overcrowded cell spaces open, the large vessels supplying them give forth blood freely, and ulceration becomes established. As this last stage advances, the bladder is affected by an extension of the morbid matter to its base. Then the rectum, the lymphatic vessels and glands of the pelvis, and the neurilemma of the sacral nerves may become invaded, and the morbid action spread to all the tissues of the pelvic cavity. The frequency with which different parts are second-

¹ *Traité prat. des Mal. de l'Uterus, etc.*, p. 875.

² *Op. cit.*, p. 192.

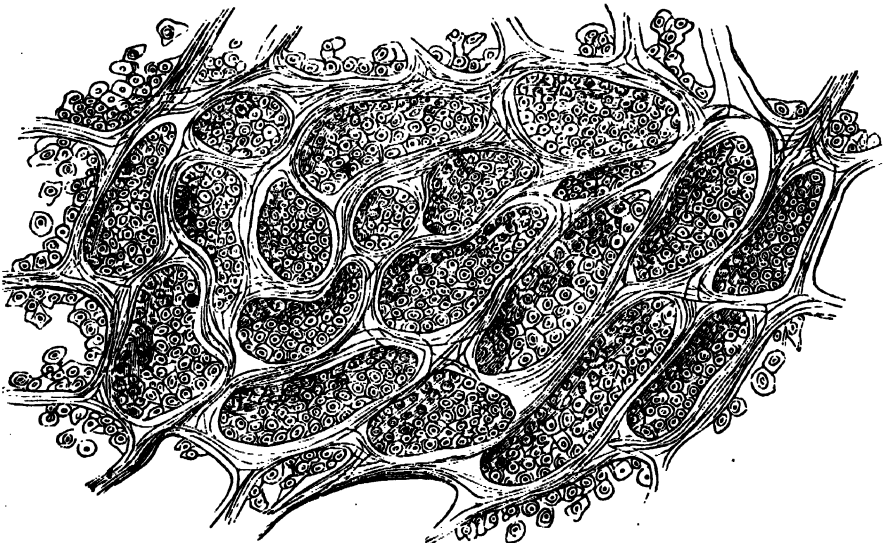
darily affected may be judged of by the following facts given by Dr. Arnott,¹ of the Middlesex Hospital :—

In 34 cases there was observed no secondary deposit.

" 20	"	"	cancerous affection of lymphatic glands.
" 5	"	"	" " the ovaries.
" 3	"	"	" " the liver.
" 2	"	"	" " the lungs.
" 1	"	"	" " the heart.
" 1	"	"	" " the breasts.
" 1	"	"	" " the peritoneum.

Scirrhus cancer presents as its predominant anatomical characteristic the large amount of connective tissue and the small amount of cellular elements of which it is composed; and as its chief clinical feature, its gradual development and comparative slowness of growth and progress. The abundant stroma alluded to soon contracts, and in so doing checks epithelial generation, causes atrophy of almost all but peripheral cells, and by compressing bloodvessels limits vascular supply. These growths offer to the examiner, before ulceration has occurred, a hard, nodular, and resisting surface.

FIG. 230.



Cancer of mamma; stroma and cells. (Billroth.)

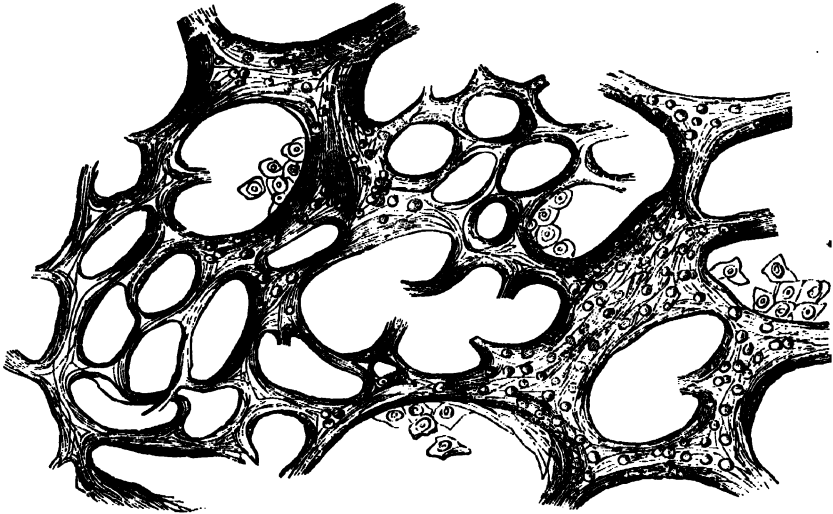
Encephaloid cancer of the cervix is characterized by a small amount of stroma and a large amount of cells. Clinically it is marked by its rapid

¹ Path. Trans., 1870.

growth, tendency to hemorrhage, and early disintegration. Upon physical examination during life it presents a soft, lobulated, elastic surface.

Figs. 230 and 231, after Billroth, showing the arrangement of cellular and connective tissue elements, will prove instructive.

FIG. 231.



Connective tissue framework of cancer of mamma. Brushed-out alcohol preparation. (Billroth.)

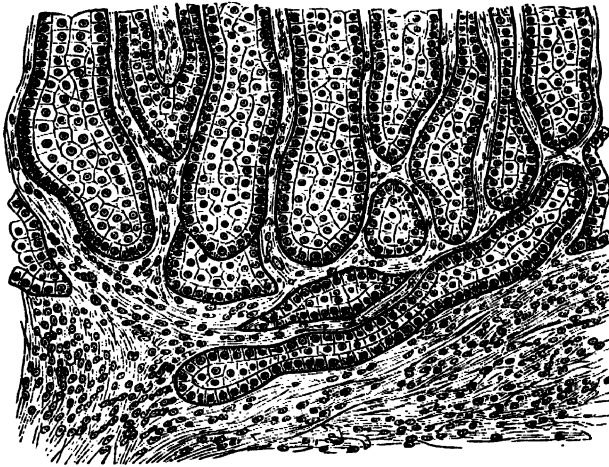
Epithelial cancer differs greatly both in anatomical and clinical features from the forms just enumerated, and claims especial consideration. Commencing by excessive generation of the cells which characterize the part upon which the morbid influence is excited, it develops itself always in connection with epithelial covered surfaces—skin or mucous membrane. In some cases the stroma is very abundant; in others it is almost entirely wanting. As the cells increase in this, they arrange themselves into epithelial brood nests or spaces.

The importance of the distinction between this form of cancer and those previously mentioned is at present not as generally accepted as it was twenty years ago. At that time pathologists thought it necessary to divide cancers into two separate classes: those which were essentially true cancer, and those which were (*scdœs*) like unto, though not identical with, that terrible malady. In 1846, Lebert gave to these growths the name of “cancroid” for the reason just given; and in 1852, Hannover, from the fact that this variety of disease was known to consist in a morbid hypergenesis of normal epithelium, called them “epithelioma.”

For a long time the current of opinion appeared to set in favor of making a wide distinction between the two affections; one being looked

upon as a disease having its origin in a peculiar condition of the system, and the other as one of local nature only. More recently a different feeling has prevailed, pathologists strongly inclining to the view that canceroid growths are really members of the family of cancers, differing from them histologically chiefly in the features which I have mentioned. On their part, clinicians noticed very marked differences, chief among which are tardiness of systemic poisoning in canceroids, and slighter tendency to return of the disease after amputation. Rokitsansky¹ said of them: "In many cases, however, notwithstanding precisely the same morphological and chemical relations, they accord so entirely in all their manifestations with the cancers, that we classify them with these as a further variety of medullary carcinoma, to which in their lineaments also they approximate

FIG. 232.



Flat epithelial cancer of cheek. Glandular ingrowth of rete Malpighii into connective tissue. (Billroth.)

the most nearly. This occurrence we believe to be limited to the mucous membranes and the common integuments." Virchow, whose investigations have been later than those of Rokitsansky, regards epithelioma as well as cancer as due to a generation of normal cells excited into a morbid activity by the unknown influence which constitutes the cause of cancerous affections. He² has demonstrated the development of canceroid substance within the uterine wall as well as upon its mucous membrane.

In the commencement of each variety of malignant disease the clinical differences would be easily recognized; but as epithelioma advances, and the deeper tissues become involved, a differentiation will often become not only difficult but impossible.

¹ Op. cit., vol. i. p. 217.

² Klob, op. cit., p. 19.

Epithelial cancer may affect the uterus in two entirely different forms. The first is characterized by a strong tendency to ulceration; the second by formation of a tumor, or fungus-like mass, which at a later period is attacked by ulceration. These forms have been designated as—

Ulcerating epithelioma;

Vegetating epithelioma.

The term corroding ulcer was applied by Dr. John Clarke, of London, and subsequently by his brother Sir Charles Mansfield Clarke, to a form of ulcer of the cervix in which nothing but rapid destruction of tissue is noticed as a pathological lesion; in which there is no hardness of the part affected, no induration nor inflammation of surrounding organs; nothing but molecular death in the cervix uteri, and disappearance of its structure as if by liquefaction. It has been described under the names of rodent ulcer, diffuse ulcerative cancer, epithelial cancer, and cancroïd of the uterus.

All authorities agree that this affection is comparatively rare. Dr. Ashwell¹ remarks: "For one case of corroding ulcer we meet with ninety or a hundred of cancer of the uterus;" and he further states that in the appropriate ward at Guy's Hospital at the time of his writing, not one example of this malady had appeared. In five hundred recorded cases of uterine disease in that hospital not one case of corroding ulcer was to be found. This is the experience of all authors who make their reports, not from clinical but from careful post-mortem evidence. Those who rely upon clinical observations alone report the disease much more frequently; but it is highly probable that, as Scanzoni² remarks, an error has been made in such cases with reference to its anatomical characteristics. It should be borne in mind that many cases, proved by the microscope in post-mortem inspection to be unquestionable carcinoma, have run a course very similar to that of this affection. Ashwell states that on several occasions where a diagnosis of corroding ulcer had been made, post-mortem examination gave evidence of other forms of cancer; and Scanzoni tells of a case, occurring in the clinique at Prague, in which at an autopsy all present were inclined to reverse their diagnosis of carcinoma and adopt that of corroding ulcer, until the matter was settled by necropsy.

Pathologists are now very generally agreed that this affection is a variety of epithelial cancer, as the following table will prove. In preparing it no author is quoted who wrote over thirty years ago.

¹ Dis. of Women, p. 318.

² Op. cit., p. 217.

Authority.	Opinion as to Pathology.	Where reported.
Dr. West	Epithelial cancer	West on Diseases of Females, p. 270.
Dr. Graily Hewitt .	A form of cancer	Hewitt on Diseases of Women, Amer. ed., p. 211.
Dr. Churchill . . .	"Essentially different" from cancer.	Churchill on Diseases of Women, p. 208.
M. Aran	Diffuse ulcerating cancer .	Aran, Mal. de l'Utérus, p. 937.
Dr. Scanzoni . . .	Decomposed medullary cancer.	Scanzoni on Diseases of Females, p. 227.
M. Nonat	Epithelial cancer	Nonat, Mal. de l'Utérus, p. 521.
M. Becquerel . . .	Epithelial cancer	Becquerel, Mal. de l'Utérus, tom. ii. p. 209.
Dr. Ashwell	Similar to lupus	Ashwell on Dis. of Females, p. 319.
Dr. H. Bennet . . .	Epithelial cancer	Bennet on Uterus, p. 386.
Mr. De Morgan . . .	"A modification of epithelioma."	Essay before Lond. Path. Soc., March, 1874.
Mr. Arnott	"A form of epithelioma."	Discussion before London Path. Soc., March, 1874.
Dr. Byford	Epithelial cancer	Byford, Med. and Surg. Treat. of Women.
Dr. Lever	Malignant ulcer	Lever on the Diseases of the Uterus, p. 149.
Dr. Kiwisch	Decomposed medullary cancer.	Scanzoni, Diseases of Females, p. 227.
M. Columbat de L'Isère	Compares it to noli me tangere.	On Females.
M. Courty	Epithelial cancer	Mal. de l'Utérus, p. 875.

Rokitansky¹ alludes to the disease thus: "We also find primary and syphilitic ulcers, cancerous ulcers that have resulted from the fusion of cancerous morbid growths, the so-called phagedenic ulcer of the os tincæ, Clarke's corroding ulcer. The latter may be compared to the phagedenic, cancerous sore of the skin; without having a morbid growth for its base it gradually destroys the cervix and even the greater part of the uterus, and may extend to the rectum and bladder."

"In some dissections that I had made," says Mr. Arnott,² "it seemed to me that rodent ulcer was a form of epithelioma, for one sees deep down an appearance like the cells of the rete mucosum, and occasionally the bird's-nest body; the cells are more closely coherent than in epithelioma, because they resemble more the cells of the rete mucosum, not the epidermis cells; therefore they have a still lower malignancy than any ordinary epithelioma."

The tendency of the newly formed cells is to rapid death. As the process of destruction advances through the mucous membrane into the

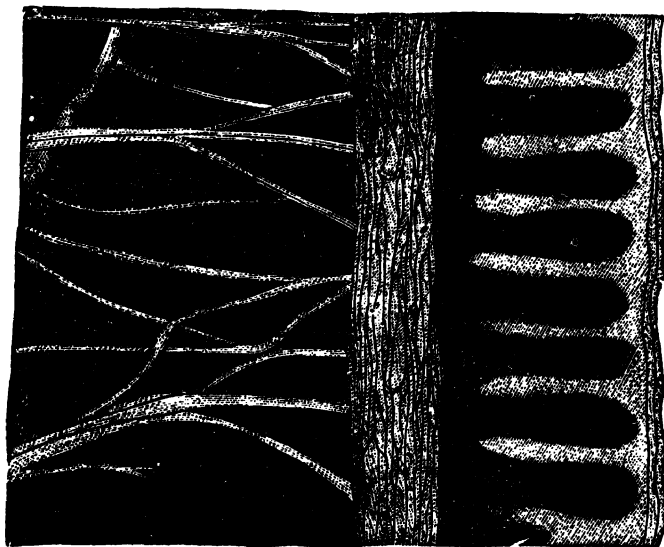
¹ Path. Anat., Sydenham ed., vol ii. p. 220.

² Discussion before London Path. Soc.

parenchyma beneath it, and profuse hemorrhages occur, the patient is gradually exhausted; and as the peritoneum in time becomes invaded, peritonitis of fatal type is excited. Unlike other cancers, however, its course is often slow, and years may pass before death results. All varieties of cancer ultimately ulcerate. The prefix, "ulcerating," as here employed, applies only to that variety whose primary feature is to break down in this way.

That form of epithelioma called "vegetating," and which has been at different times described under a variety of names, has the following characteristic features: it consists in the growth of a lowly organized tumor, which creates hemorrhage, fetid discharge, and hydrorrhœa. There is an extraordinary development of cervical villi, an increase of their vessels, and a great activity in the growth of the cells which cover them; a "proliferation," as it is termed by Virchow. A morbid influence, the nature of which is unknown to us, stimulates the activity of cell growth, so that cells thickly cover the villi. "These growths," says Prof. J. H. Bennet, "speaking generally, are almost wholly composed of epithelial scales."

FIG. 233.



Transverse section of a vegetating epithelioma. (Virchow.)

In addition, the villi increase in size and length, their bloodvessels enlarge, and a true papilloma or papillary tumor is inaugurated. "The gall-nut which arises in consequence of the puncture of an insect, the tuberous swellings which mark the spots on a tree when a bough has been cut off, and the wall-like elevation which forms around the border of the wounded surface, produced by cutting down a tree, and which ultimately

covers in the surface, all of them depend upon a proliferation of cells just as abundant, and often just as rapid as that which we perceive in a tumor of a proliferating part of the human body." Fig. 283 represents one of these growths in section.

It must not be supposed that these masses are supplied with blood only by the vessels of the villi. These ramify outside of their proper canals, and, running into the masses of cells, allow of transudation of serum, which constitutes the watery discharge so characteristic of the disease, and, being ruptured, give forth a profuse flow of blood.

These tumors, commencing as papillary hypertrophies on the cervix or os, are at first local, but in time affect the constitution. They are sometimes engrafted upon true cancerous deposit in the cervical parenchyma.

Their most frequent site is the vaginal portion of the cervix, but from this point the morbid process may spread into the uterine cavity or down into the vagina. An important, indeed a vital question as to such growths is this: is every cauliflower excrescence a malignant disease? Virchow, than whom we know of no better authority, is decidedly of opinion that it is not. "The pathological importance of a papillary tumor," says he, "is, at least as far as I know, determined by the condition of its basis-substance, or by that of the parenchyma of the villi themselves; and a formation can only be pronounced to be canceroid or carcinoma when, in addition to the growth of the surface, the peculiar degenerations which characterize these two kinds of tumors take place also in the deeper layers or in the villi themselves." Virchow then believes that some tumors, resembling in every outward aspect vegetating epithelioma, are really non-malignant papillomata. The difference between these and the real epithelioma is to be found by microscopic examination of the submucous tissue. In the one case it is healthy, in the other diseased. "Whilst," says Klob, "in the benign form, simply an arborescent framework is covered by a more or less thick layer of basement-epithelium, in the canceroid tumor, so-called *canceroid alveoli* are developed in the substance proper of the tumor, and also in the 'parent tissue,' which is affected with hyperplasia of connective tissue." It is a noteworthy and interesting fact that this opinion, arrived at by these learned German pathologists by careful microscopic research, was maintained as a result of clinical observation many years ago by Gooch, who said: "I do not believe that any man can tell infallibly by touch whether a tumor in the vagina is a malignant excrescence, which is to grow again, or a benign one, which, if removed, will never return."

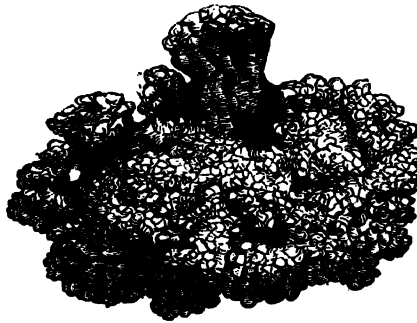
The pathological condition that we have thus far described may be styled the first stage of the disease. In time ulceration occurs in the mass thus created, which, rapidly breaking down its tissue, opens large

and numerous vessels, and destroys life by long continued and profuse hemorrhages.

Klob¹ describes two forms of malignant papilloma; one which goes on to the creation of a tumor of some size and then breaks down; the other, which consists merely of small nodules upon the cervix, which rapidly ulcerate and eat away this part, and in time the body of the uterus. These tumors may grow from the vaginal portion of the cervix, from the cervical canal, or from the mucous membrane of the body of the uterus.

The authority of Virchow has been already quoted to prove how difficult is a differentiation of malignant from benign papilloma. Indeed, Scanzoni declares that Virchow is of opinion that "the excrescence is at first a simple papillary tumor, which afterwards passes into a cancrroid state." At the same time that differentiation is difficult in such a case, its great importance, as affecting the validity of deductions as to the results of treatment, must be evident. The following quotation from Graily Hewitt's² excellent work will illustrate this remark. In speaking of the fatality

FIG. 234.



Vegetating epithelioma. (Simpson.)

and duration of cancerous and cancrroid affections, he says, "One of the most valuable facts in this connection is given by Sir J. Y. Simpson in his 'Lectures on Diseases of Women.' The patient, the subject of the case, had a large cauliflower excrescence, the size of an egg, removed eighteen years previously. Since that period she has had five children, and was still alive. With reference to this case it should be stated that no 'caudate or spindle-shaped bodies' were found in the tumor removed." Now if we are to accept the revelations upon this subject made by recent investigators, of what real value is such a case? It is more likely to mislead than to guide the practitioner correctly. Klob,³ while guarding against the fallacy of judging by external appearances, gives this method of differentiation by the microscope. "In simple papilloma there is a

¹ Op. cit., p. 189.

² Op. cit., p. 578.

³ Op. cit., p. 187.

framework covered merely by a thick layer of basement-epithelium; in malignant papilloma there are alveoli filled with cells constituting the so-called 'brood-cavities.'"

Predisposing Causes.—Those predisposing causes which are generally admitted may be thus enumerated:—

- Hereditary tendency;
- Middle or advanced life;
- Race, the African enjoying partial immunity;
- Repeated parturition;
- General depreciation of vital forces.

Hereditary tendency, once generally admitted as a fruitful predisposing cause, is now questioned by many.

Lebert found evidences of hereditary tendency in 14 out of 102 cases.

Paget	"	"	"	78	"	322	"
Sibley	"	"	"	33	"	305	"

More recently Sir James Paget declares that in his experience about one case in three has been hereditary.

Although cases have been reported at the extremes of womanhood, it is generally admitted that few occur before twenty and after sixty. The most fruitful period is from 40 to 50; the next from 30 to 40; the next from 20 to 30; and the next from 50 to 60.

Scanzoni gives the ages of 108 cases treated by him.

4	were	between	20	and	25.	45	were	between	40	and	45.
4	"	"	25	and	30.	15	"	"	45	and	50.
17	"	"	30	and	35.	4	"	"	50	and	55.
18	"	"	35	and	40.	1	was	"	55	and	60.

The youngest was 23 and the oldest 59 years of age.

The black races appear to enjoy to a limited extent immunity from this disease when compared with the white.

Prof. Barker, in an interesting essay upon this subject, published in the Transactions of the New York Academy of Medicine for 1870, cites the following statistics by Prof. Chisholm, of Baltimore:—

Registrar's report in South Carolina for 1859—

In 2423 deaths among whites, 20 were of cancer;
In 7277 " " blacks, 29 " "

Judging from these statistics, the exemption of the black races is by no means so complete as the general impressions of many practitioners appear to argue.

Cancer of the uterus is more frequently observed among multiparæ than nulliparæ. Of Scanzoni's 108 cases—

8 had been delivered 11 times.

3	"	"	10	"
14	"	"	8	"
13	"	"	7	"
21	"	"	6	"
10	"	"	5	"
3	"	"	4	"

The results of Mr. Sibley's investigations in the Middlesex Hospital go to prove this fact. He found that the average number of children borne by women suffering from this disease was 30 per cent. in advance of the average number of all marriages.

Although it is maintained by some, that cancer as commonly affects persons in perfect health as it does the weak, it is generally admitted that depreciating influences exerted upon the general system have a predisposing effect. Among these may be especially mentioned grief and mental anxiety, (observed by Scanzoni 84 times in 108 cases,) overlactation, the existence of any diathetic state, life in a large city, and the state of spanæmia engendered by hard labor, exposure, insufficient food, or vicious habits.

Exciting Causes.—As has been already stated, the view once entertained by many, that cancer is often a result of chronic inflammation, is now generally repudiated. In my own experience I have yet to find a case even remotely sustaining such a position. There is, however, believed to exist, to use the words of Paget, "a local and a constitutional origin of cancer." Mr. Hutchinson humorously styles cancer "a rebellion of cells." It is the cause which incites this rebellion which has thus far eluded the search of pathologists and clinicists in general medicine and surgery.

With reference to uterine cancer, my experience certainly goes strongly to sustain the opinions of Breisky, Emmet, and others, that epithelioma of the cervix very generally engrafts itself upon a laceration. Laceration exposes the complicated cervical endometrium, with its thousands of Nabothian follicles, to great irritation, which in time produces this untoward result in a certain number of cases. This constitutes of itself a valid reason for a resort to Emmet's operation in cervical laceration.

Symptoms.—The disease may pass through its period of inception and make considerable progress towards a fatal issue without developing any symptoms which attract the attention of the patient. Or only slight leucorrhœa and hemorrhage may exist, which may have been passed over as trivial circumstances, not deserving treatment or investigation. Usually the following symptoms develop themselves and become more and more prominent as molecular death advances :—

- Pain through the pelvis ;
- Tenderness upon movement or coition ;
- Menorrhagia and metrorrhagia ;

Ichorous and fetid leucorrhœa ;
 Hydrorrhœa ;
 Dark, grumous discharge ;
 Constitutional debility ;
 Pallor and cachectic facies ;
 Vesico-vaginal or recto-vaginal fistulæ.

Pain and tenderness are not nearly so constant or severe as is often supposed, and they may both be entirely absent.

Menorrhagia and metrorrhagia may exist even before ulceration has occurred, resulting then from congestion of the mucous membrane. But it is not until after the inauguration of the process of destruction that they become alarming or excessive.

Ichorous, watery, and grumous discharges very generally mark the advance of the disease. The first of these discharges produces erythema, erosions, vaginitis, and sometimes¹ a strong sexual appetite. The second exhausts the patient by draughts made upon the serum of the blood. The third creates fetor, and sometimes results in septicæmia, for the material giving color and odor to the flow is a putrilage formed by the detritus from the decaying uterus.

Constitutional debility and cachectic facies are the results, in part, of the malignant toxæmia which is the basis of the disorder, in part of exhaustion produced by loss of blood or some of the elements. Should the walls of the rectum and bladder become implicated, as they very often do, the functions of these viscera are deranged, and the feces or urine, or both, pour out through the vagina, increasing the misery of the patient.

Physical Signs.—Suspicion is generally first aroused and physical exploration prompted by these three symptoms: menorrhagia, fetid discharge, and ichorous leucorrhœa. They belong to the second or ulcerative stage of the affection, and, as Dr. Henry Bennet has well established, it is almost invariably in this stage that the physician is consulted. Before the occurrence of this stage no symptom usually exists which calls for physical exploration.

As I have already stated I have seen but two cases which I am positive were incipient or non-ulcerated scirrhus cancer. In these the diagnosis was made by the peculiarly hard, nodular sensation yielded by the cervix, and in one by the coincident implication of the vagina. I feel sure, however, that he who ventures upon a decision as to the nature of the disease at this stage must expose himself to great risk of error. The mere fact of the cervix being excessively hard and nodular is not enough to warrant a diagnosis. This must be accompanied by other reliable signs, as menorrhagia, hydrorrhœa, and constitutional failure, to make a positive conclusion admissible.

¹ I have never met with this symptom.

For this period of the disease, a period at which diagnosis is of extreme importance, in view of the fact that then ablation offers the greatest hope for permanent or temporary relief, Spiegelberg offers a valuable resource in the use of sponge tents. If the induration of the tissue be benign, the dilating influence of the tent will produce a degree of softening, while, if it be due to malignant disease, the tissue will remain unyielding and hard.

After ulceration has occurred, diagnosis, *to an experienced examiner*, is as simple and certain as it is obscure and uncertain before it. The finger discovers an absolute destruction of tissue, and finds the walls of the deep and ragged ulcer producing it covered over with a crumbling, brittle mass, interference with which causes hemorrhage. The uterus is often fixed by secondary inflammation, or diffuse deposit of cancerous matter, and the walls of the vagina near the uterine junction participate in the deposit. Sometimes there is a stricture of the rectum, which especially engages the attention of the patient, who suspects no disease of the uterus or vagina.

It is difficult to describe to another the peculiar sensation yielded by an ulcerating cancer, but it is easy to appreciate it by touch. He who carefully explores one case, and marks the hard, unyielding border and brittle surface, with its marked tendency to crumble and produce hemorrhage, will rarely fail to recognize another.

Nevertheless, it is in all cases safe, and in some essential, to remove a small portion of the cancerous material if it can be done without creating great flow of blood, for examination with the microscope. And now arises the question, what are the microscopic tests of cancer? This subject is one which I cannot leave unnoticed, and yet one with which I must deal as cursorily as is consistent with a concise statement of the existing views of pathologists upon it. This can, I think, most readily be done by a series of propositions.

1st. There is no typical cancer cell, which, separated from its surroundings and viewed as an entity, enables a microscopist to pronounce upon a growth.

2d. There are certain combinations of cells, alveoli, and stroma which do enable a microscopist to pronounce an opinion as to the benignity or malignancy of a growth.

3d. This combination consists, in general terms, in the existence of a fibrous stroma, containing ovoid alveolar spaces, filled with masses of cells with large single or multiple nuclei, and all bearing more or less closely a resemblance to epithelium.

Differentiation.—Upon theoretical grounds it might be supposed that the diagnosis of ulcerated cancer would be so simple that few errors would occur in reference to it. This is far from the truth. A skilful diagnostician would, indeed, generally arrive at a correct conclusion, but I know

of no disease of the genital organs of the female, unless it be pelvic peritonitis, which so frequently gives rise to errors of diagnosis with the inexperienced. It may be confounded with—

Eversion of cervix from laceration ;
 Papillary hypertrophy of the cervix, (cock's-comb ulcer ;)
 Sloughing fibrous polypus ;
 Uterine fibroids ;
 Syphilitic ulcer ;
 Areolar hyperplasia of cervix with metrorrhagia ;
 Sarcoma of the uterus ;
 Retention of products of conception.

From these a differentiation should be arrived at by careful study of the progress of the case, by the degree of constitutional implication, by the results of microscopic examination, and by the development of a tendency to return after removal. A positive conclusion is not always easy, or, without delay, even practicable. An intelligent decision of the question must depend upon care in investigation, thoroughness of examination, and upon time, which in most cases will clear up all doubt. It should be remembered that the diagnostician, however skillful he may be, who bases an opinion upon the sensation of hardness and resistance in the cervix, is running a great risk of error. Let it be borne in mind, too, that syphilitic ulcers have been known to eat into the bladder and rectum and create very much such a state of things in the vagina as carcinoma develops.

Prognosis.—The prognosis is pre-eminently unfavorable. Not only is it so from the fact that the disorder is cancerous, but because that form which often affects the uterus belongs to the most rapid and dangerous of its varieties. "Medullary carcinoma," says Rokitansky, "is, both in its development and in its subsequent course, the most acute of all cancers."

In some cases death will ensue in from three to six months, while in others it may not occur for five, six, or seven years. The prognosis should be governed in great degree by the character of the initial affection: true carcinoma, which begins with profound implication of subjacent parenchyma, runs a more rapid course than epithelioma, which often involves only superficial portions of it. The general experience as to the duration of cancer of the uterus may be inferred from the following citation of authorities:—

Simpson gives as an average,	.	.	.	.	2 to 2½ years.
Lebert	"	"	.	.	about 16 months.
West	"	"	.	.	about 15 months.
Barker	"	"	.	.	3 years and 8 months.

The termination of cancer of the uterus, if the disease be uninterfered with, is very generally a fatal one, although it is admitted that there is a

possibility that the mass may slough away, the surface heal over, and the patient recover. Scanzoni, Rokitansky, Kiwisch, Virchow, and Klob, all announce this fact, strange though it may appear to one who has always taken a more gloomy view. "The cases of spontaneous recovery from uterine cancer," says Rokitansky,¹ "are of extreme rarity, but they do occur." "In opposition to the above phenomena, which inevitably lead to death," says Klob,² "the universally acknowledged possibility of spontaneous recovery from uterine cancer is interesting." Let it be remembered that these authors distinguish between cancer and cancroïd, and are here writing of the former.

Under these circumstances the whole vaginal portion of the cervix usually sloughs off, and the os internum becomes the os externum. Instances of spontaneous recovery from true carcinoma are so rare and interesting that I refer the reader to the history of a case recorded by Prof. Habicht, of Vienna, which will be found in the Syd. Soc. Year-Book for 1864, at page 401.

When death, which is the almost inevitable issue of cancer, does occur, it is usually due to hemorrhage, irritative fever which assumes a typhoid form, septicæmia, uræmia, anæmia, or some one or more of the numerous complications which I now come to enumerate.

Complications.—The following are the complications which most frequently accompany the disease:—

- Septicæmia from absorption of putrid fluid;
- Cellulitis;
- Hydronephrosis;
- Peritonitis;
- Tetanus;
- Phlebitis;
- Embolism;

Cancer in lymphatic glands or other organs.

In rare cases, as has been pointed out by Beatty, Cruveilhier, and others, cancerous degeneration obstructs the ureters, and produces in this way uræmic poisoning. Dr. Theophilus Parvin records an instance of this character in which for a week no urine found its way into the bladder, and the symptoms of uræmia were well marked.

Part of Uterus Affected.—Cancer much more frequently affects the neck than the body of the uterus, although some authors, with whom I decidedly agree, look upon cancer of the body as much more common than is generally thought.

Although cancer developed in the body of the uterus has attracted very little attention, it is by no means exceedingly rare. Dr. West has met with it in two out of one hundred and twenty cases of malignant uterine

¹ Op. cit., vol. ii. p. 228.

² Op. cit., p. 203.

disease, and Sir James Simpson looks upon its frequency as represented by two out of every thirty cases.

The most marked feature of the affection thus making its appearance is the obscurity which attends diagnosis. For a long time, and perhaps throughout the case, uterine hemorrhage and fetid discharges will be the only symptoms which will excite suspicion. These leading to further and fuller exploration, a portion of the morbid tissue will be removed by the curette, examined by the microscope, and thus the diagnosis will be established.

Scirrhus, which is so rare as to be denied by some even in the neck, never affects the body, and so rarely does encephaloid do so that some pathologists declare that no unquestionable case is on record. The supposed cases are, according to them, really instances of sarcoma, tuberculosis, or sloughing fibroid growths. When malignant disease does originate in the cavity, it assumes the form of epithelioma.

Peculiar Features of Cancer of the Body.—The symptoms which mark the condition are :—

Hemorrhage, especially if occurring after the menopause ;

Depreciation of vital forces ;

Cachectic appearance ;

Fetid discharge ;

Pains of severe and lancinating character.

These symptoms having led to examination of the uterus, the following physical signs will probably be recognized :—

Enlargement and hardening of uterine body noticed by bi-manual palpation ;

Increased capacity of uterus ascertained by the probe ;

Profuse hemorrhage upon probing ;

Uterine¹ tenesmus with dilatation of os ;

Recognition of peculiar intra-uterine growth by introduction of finger ;

Microscopic evidences of cancer.

Differentiation of Cancer of the Body.—When the rational and physical signs here enumerated are carefully developed and considered, a very probable diagnosis may be arrived at. Nevertheless, errors of diagnosis are common in reference to this disease at the hands of practitioners who are not familiar with the subject, or who rely too firmly upon one or two of these signs or symptoms. I have seen each one of the following conditions mistaken for cancer of the body, and some of them I have known to have repeatedly caused erroneous diagnosis :—

A sloughing fibroid ;

A retained placenta ;

¹ Courty, op. cit., p. 580.

A sponge left by accident in utero ;
 Syphilitic disease of pelvic bones ;
 Periuterine cellulitis or peritonitis ;
 Cystic degeneration of chorion (hydatids) ;
 Fibroid tumors or polypi ;
 Entero-uterine fistula ;
 Intra-uterine vegetations.

I do not deem it necessary to go into detail upon the means necessary for accomplishing the differentiation of these affections from malignant disease. It will suffice to say that in cases in which doubt exists after careful investigation by all the other means here recommended, removal of a small portion of a mass and its examination by the microscope will prove of the greatest assistance, and will probably decide the question.¹

The removal of a portion of intrauterine cancerous growth may be accomplished in three ways. The simplest, and consequently the best, is to introduce a silver catheter, turn it around once or twice, and then withdraw it. Upon blowing through the manual extremity a piece of the growth large enough for examination will generally be obtained, for these masses are usually very friable. Should none of the growth be obtained in this way, a curette may be passed gently into the uterus, and greater force applied for the detachment of a portion. Should even this fail the os should be dilated by tents, and the desired specimen obtained either by the finger, a wire-loop curette, or Emmet's forceps.

Treatment.—The indications for treatment are these :—

- To amputate or destroy the diseased part as completely as possible ;
- To check hemorrhage ;
- To relieve pain ;
- To secure perfect cleanliness and correction of fetor ;
- To sustain the general strength.

Review the complications of uterine cancer, and it will be seen that many of them are of a most fatal character, and at the same time entirely beyond the resources of art. A certain number, however, which would prove fatal if not avoided or checked, are temporarily under the control of the physician. Examples of these are septicæmia, hemorrhage, exhaustion from pain, ichorous leucorrhœa, hydrorrhœa, excessive constitutional debility from the depraved blood-state, and last, though not least, the extreme mental depression which is the consequence of bereaving the unfortunate sufferer of all hope.

No single plan fulfils so many of the indications for alleviating these as

¹ It may be of service to practitioners at a distance from cities in which competent microscopists reside, to state that, in sending specimens for examination, the best preservative menstruum consists of glycerine diluted with water. Alcohol, carbolic acid, and similar fluids contract and harden the structures to such an extent as to render them unfit for examination.

removal or destruction of the growth, but no practice in reference to this disease can be so pernicious as that based upon the idea that because there is cancer of the uterus some surgical procedure must be resorted to. The same reasoning which applies to malignant diseases in other parts of the body should do so here. If the operator be convinced that decided benefit is to accrue to the patient from surgical interference, it should be practised; not otherwise. Should the disease be detected early, and sufficient grounds be discovered for a positive diagnosis, the propriety of complete removal of the cervix by amputation cannot be questioned. If the disease be scirrhus or encephaloid cancer, and not epithelioma, the operative procedure will generally fail in effecting a cure, but will probably not hasten a fatal issue. If it be the latter, a cure may possibly be accomplished.

In the great majority of cases, patients suffering from uterine cancer are seen so late that surgical interference, established with a view to cure, necessarily fails to effect it; although, practised for relief of certain symptoms, and thus for a prolongation of life, it is frequently of a great deal of benefit. Should amputation of the neck promise entire removal of the morbid tissue, it should at once be accomplished, for by it cure may be effected. Even where complete removal is not practicable, ablation of all the superficial portions of the growth tends greatly to the amelioration of symptoms.

There are several surgical procedures by which removal of the diseased structure may be effected. One of these will be most applicable to one case, one to another; that being always selected which in the particular case will accomplish the end with the greatest thoroughness. Let it always be borne in mind that the hope of prolonged freedom from relapse depends upon thoroughness of ablation and upon that alone.

I will describe three operations for removal of the cancerous cervix uteri.

1st. Simple amputation by the galvano-caustic wire.

2d. Amputation by the galvano-caustic wire followed by the use of Simon's scoop, the knife or the scissors.

3d. Removal of the diseased texture by Simon's scoop, and of all the hard subjacent structures which can with safety be removed by the knife or scissors, followed by searing the exposed surface thoroughly with Paquelin's thermo-cautery.

In the selection of the appropriate operation for malignant disease of the cervix uteri, the operator should, as far as possible, ascertain the extent to which the tissues above the cervico-vaginal junction are involved. To ascertain this the cervical canal should be dilated by tents so that the finger can pass freely up, and a careful rectal examination should also be made. The information thus obtained is not entirely reliable, but is, nevertheless, of great value. Having obtained the desired information in

this way, the special operation to be resorted to should be selected upon the following grounds.

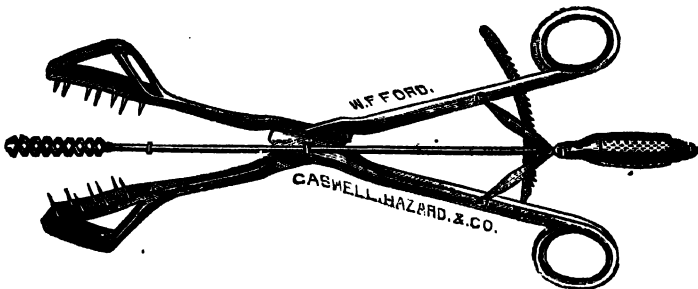
If the disease be found to limit itself to the cervix below a line which would represent the course which would be followed by the galvano-caustic wire, amputation by that instrument would be the most appropriate operation.

If the endometrium be found to be diseased above this point, the presumption being, of course, that the morbid action involves, to a greater or less degree, the subjacent parenchyma likewise, while the circumferential tissues of the cervix admit of a safe resting place for the galvano-caustic wire, amputation by it might be adopted, followed by removal of a cone of diseased tissue by Simon's scoop or Sims's knife; or the operation next to be mentioned might be preferred.

Should the circumference of the cervix be involved up to the vaginal junction, the softened, friable tissue gives so poor a basis for fixation of the wire, that galvano-cautery proves under these circumstances a most unsatisfactory procedure, and should be replaced by the scoop, the scissors, the knife, or a combination of the three instruments.

One of the great objections to the use of the galvano-caustic wire for amputation of the cervix uteri is, that it deludes the operator into the belief that the whole cervix is being removed while in reality the wire slips down and a mere scalping process is gone through with. This I have succeeded in entirely preventing by the instrument shown in Fig. 235.

FIG. 235.



Forceps for amputating the cervix.

By the screw, which slides up and down, the cervix is pulled down into the bite of the forceps, which is then closed and clamped and the screw is reversed and lowered. The wire loop is then passed over the most prominent part of the diamond-shaped sides of the forceps, and, being tightened, slides to its highest point.

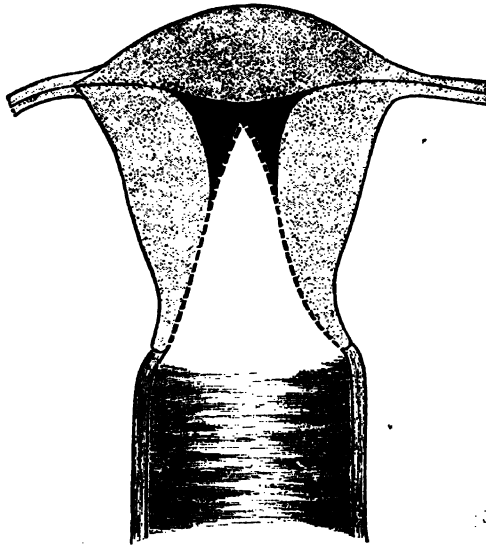
This part of the procedure is best performed with the patient anæsthetized and lying in Sims's position, and his largest sized speculum in

place. If this be found very difficult of performance, the operator may, by vulsella, pull the uterus down to the vulva.

The best and simplest batteries for this purpose are those of Byrne, of Brooklyn, and Dawson, of New York. Both of them are very small, compact, and reliable.

If, after the incandescent wire has cut through the circumferential tissues of the cervix, traction be made, the gradually weakening structure will yield, and the result will be a conical amputation, as Dr. Byrne has pointed out, somewhat resembling the diagram exhibited in Fig. 236, though of course the cone removed will be much less extensive.

FIG. 236.



Cervix amputated and parts above cut out.

It has been said that the cold knife is better in the performance of this operation than the incandescent one, because the former allows the operator to test by his fingers the existence of diseased tissue, and then guide him as to the propriety of its removal. This is a specious argument, for as much tissue should be removed in every case as the operator thinks compatible with safety.

I have operated in this way on many occasions, and I cannot imagine any more complete method for accomplishing the end in view in the class of cases which I have cited.

After every such operation the vagina should be securely tamponed with styptic carbolized or thymolized cotton for at least ten days, a tampon being introduced once in twenty-four or thirty-six hours. This is troublesome, but I have seen the most dangerous hemorrhage occur under

these circumstances on the ninth day after operation. Indeed it must be borne in mind by every operator that reliance upon the hemostatic powers of electro-cautery in this operation is a delusion, and a most hazardous one.

Should it be found that sufficient tissue has not been removed by this procedure, the second should be added to it. The central portion of the stump being seized by a tenaculum, its core should be removed, to as great an extent as the operator deems safe, by Simon's scoop, the long-handled scissors, or Sims's knife, so as to make the uterus resemble the schematic diagram shown in Fig. 236.

But cases not rarely show themselves in which the soft, friable, malignant material offers no rest for the wire of the galvano-caustic battery, and in which it is difficult to draw down the cervix by a tenaculum. Here all the softer cancerous masses should be scooped out after Simon's method by his scoop shown in Fig. 237. The hemorrhage which occurs

FIG. 237.



Simon's scoop.

is often alarming. Its control depends upon two things, rapidity and boldness on the part of the operator. So soon as all the cancerous material is removed, the flow of blood will cease, or rather greatly diminish. Let such removal then be accomplished as rapidly as possible.

After removal of all the soft tissue which the scoop can remove, the cervix should be cut away by scissors or knife up to the vaginal junction, and all hard tissues above which are susceptible of safe removal should in the same manner be taken away. Then the cavity of the body should be thoroughly scraped with Sims's cutting curette.

All hemorrhage should then be controlled, and all exposed tissues seared, by means of Paquelin's thermo-cautery at a red heat.

The heat reflected from the thermo-cautery is often very objectionable. To protect against this, Dr. Wilson, of Baltimore, has invented an ingenious little shield which obviates the difficulty entirely.

It will be seen that all these means lead up to one issue. That will always be best which is most thorough, and, as all offer the opportunity for great thoroughness, it follows that success in their application will depend much more upon the hand which applies the method, than upon the method itself.

All the cancerous material which can be removed having been taken away by any of the plans mentioned, the surgeon should not regard his task as yet finished. The bleeding stump should be thoroughly cauterized by the actual cautery, nitric, or chromic acid. But just after the operation, blood oozes too freely for either of the two fluid acids mentioned to

be used. It has, therefore, been advised to tampon the excavated cervix by means of cotton saturated with strong solutions of zinc, bromine, etc. The unmanageable character of such tampons, however, as to the degree of sloughing which they produce, renders them highly objectionable, and the scientific surgeon feels too surely that he is imitating the erratic practices of the "cancer curer." Paquelin's thermo-cautery, brought to a red heat, may be used to check hemorrhage and to destroy the base upon which the cancer grew. Should it stop the hemorrhage entirely, it may be followed by one of the acids mentioned; if not, by a tampon, which being removed in twenty-four hours, cauterization by the acid may be practised.

After all these operations I would recommend putting two or three silver wire stitches on each side, so as to make the two halves of the stump face each other. They will probably not unite by first intention. That is not the object of the procedure. The granulating stump will be protected from friction by partial union, and will progress much better than it will do if left entirely exposed. After doing this, and at the end of twelve or fourteen days removing the sutures, I have been surprised to see how perfect the mutilated parts appeared. This is only an imitation of Sims's procedure for covering the stump and securing union by first intention after his amputation.

Although cancer of the uterus is in itself no more malignant in type than that of other parts, the mamma, for instance, it is much more difficult of entire removal, for the reason that its existence is generally ascertained later in the progress of the case, and thus it has involved deeper layers of parenchyma and has encroached more upon neighboring organs.

Where it is decided not to resort to surgical resource, great advantage often accrues from destruction of the superficial layer of diseased tissue by chemically pure nitric acid. To apply this the cervix should be exposed by Sims's speculum, cleansed by a stream of water from a syringe, and thoroughly dried by dossils of cotton or sponge. Then the acid should, by means of cotton wrapped around a rod, be thoroughly applied to the whole diseased surface. After this a stream of water should be again projected upon the cervix, and a pad of cotton saturated with glycerine made to envelop it. The caustic application produces a decided slough, which destroys many of the bloodvessels which have proved the source of hemorrhage. I regard this as one of the best methods for accomplishing partial destruction of a cervix affected by cancer, and resort to it frequently in practice with excellent results. Such an application may be repeated once in two or three months; and it is curious to see how patients will urge a repetition of it. I can fully indorse the statement of Dr. Churchill, who thus speaks of the use of strong nitric acid as a caustic: "I have found it relieve pain, arrest hemorrhage, and restrain the discharges. In one case, hopeless when I first saw her, life was prolonged for three years under this treatment."

If chemically pure acid be obtained and efficiently applied, it will fulfil every indication required of an escharotic. I have discarded in its favor all the more violent ones, such as potassa fusa, the actual cautery, etc.

The injection of escharotics into cancerous growths, by means of the hypodermic syringe, has of late years been practised, and gained some favor. But, with the caustics which we possess, complete destruction of any malignant growth upon the cervix or in the body of the uterus is so easy and simple a matter that it is difficult to conceive why a resort to "parenchymatous injections" should ever become necessary.

Means which destroy the superficies of the cancerous mass have a decided influence in controlling hemorrhage. It may further be controlled by rest during menstruation and by astringent vaginal injections. The most appropriate styptics are the sulphates of alum, zinc, and copper, alone or combined, in about the strength of one or two drachms to the pint of water.

The relief of pain should be accomplished by the free, unrestricted use of opium by the mouth, the rectum, or under the skin. I often encourage my patients to become opium eaters, and urge them to obtain as complete relief as the use of this drug can afford. In place of opium, other narcotics may be tried, but there is none which compares with it for efficiency. In some cases the hydrate of chloral in scruple doses will be found to answer an excellent purpose, either as an alternate or a substitute for opium. It produces sleep, quiets pain, and is free from those consequences which frequently render opium objectionable.

When opium produces the painful results noticed where an idiosyncrasy exists against it, the persistent use of it will often effect a tolerance. In these cases the hypodermic use of morphia often becomes the greatest boon.

It is wonderful to see what large amounts of opium may be consumed, not only without danger, but with absolute benefit, for relief of the pains of cancer. Pinel is said to have administered to a woman at La Charité 120 grains of solid opium in twenty-four hours; Marc allowed a patient to take 62 grains of morphine in the same time; and Monges and La Roche, of Philadelphia, gave three pints of laudanum in twenty-four hours, and kept up its administration at this rate for three months. Dr. Knight, of New Haven, had a patient who consumed three drachms of morphine in twenty-four hours, and continued the use of this drug for a considerable time in amounts almost equal to this.¹

The fetor of the discharges may be, to a great extent, corrected by the use of vaginal injections containing disinfectant substances in solution. A solution of carbolic acid or thymol, Labarraque's solution of soda, powdered persulphate of iron or sulphate of copper, or a weak solution of the iodide

¹ These facts are recorded in Dr. Calkin's valuable work on "Opium and the Opium Habit." Lippincott & Co., Philadelphia.

of lead, will prove very useful. Of all these, carbolic acid is the most certain and effectual.

Constitutional Treatment.—Nothing is more important for a practitioner in the treatment of morbid states than to have in his mind a clear and distinct line drawn between those means which repair the ravages of disease, sustain and soothe the system under its deleterious influences, and put it in condition to allow nature to strive for recovery on the one hand; and those which by some specific action cure the affection on the other. A confusion of these two ideas has done mischief in causing hypermedication, and in creating erroneous conclusions as to the value of drugs. In cancer a variety of drugs has at various times since the birth of Christ, and indeed before it, been vaunted as exerting a specific influence. As examples, for I have not space to mention one tithe of the whole, mercury, iodine, arsenic, hemlock, bromine, gold, silver, and other drugs, have had their day. After a fair trial having been given to each, but one conclusion can be drawn by a writer of the present time, namely, that we appear to be as far removed from the discovery of a cure for cancer as were the contemporaries of Hippocrates.

While this is true as to specific medication, a much more gratifying statement must be made as to remedies calculated to stay the progress and combat the ravages of cancer.

The general strength should be maintained by fresh air, residence in the country, generous food, alcoholic stimulants, iron, and bitter tonics, while the mind should be kept cheerful by lively company, and avoidance of the society of those who encourage conversation concerning the existing disease. As the digestion is weak, the most digestible substances should constitute the staple diet, and very often a patient who will become emaciated upon solid food and a mixed diet will improve upon the exclusive use of milk, beef-tea, and similar substances. So marked is this fact, that the milk diet strictly adhered to has been regarded, by many non-professional persons, as a means of cure for cancer.

Among bitter tonics, I have found Huxham's Tincture an excellent one to stimulate the appetite and sustain the strength, and for the impoverished blood-state created by hemorrhage the hypophosphites answer an excellent purpose.

Extirpation of the Uterus.—Of late, the extirpation of the entire uterus for malignant disease confined to it has not only been advocated, but repeatedly practised. The procedure which has been followed has been that of Prof. Freund, of Breslau, the greatest advocate of the operation. The "Chicago Medical Gazette," quoting from "Schmidt's Jahrbucher," gives the following statistics of complete uterine extirpation for malignant disease of the uterus. Freund has performed 14 operations with 8 deaths, 5 recoveries, 1 incomplete operation. Of the five recoveries one died from a return of the cancer, one from pleuritis, and a third is now suffering from

a return of the cancer. Of the remaining 25 operations of which the results are known, which have been recorded by various operators, 19 died, 5 recovered, and in one case the operation was incomplete. Of these five successful cases, in three the cancer returned.

The procedure of Prof. Freund is the following. An incision being made through the median line, the intestines covering the uterus are held up out of the pelvis by means of a soft linen cloth soaked in warm, carbolized water, until the operation is finished. One thread is passed through the fundus uteri, and another through the peritoneum of the anterior part of the pelvis, to prevent its collapse, and held by assistants. Each broad ligament is now ligated in three portions, the upper ligature transfixes the Fallopian tube and the ovarian ligament, the middle one passes through the ovarian ligament by the side of the upper ligature and returns through the round ligament; the lower pierces the round ligament and is carried twice through the vaginal wall—first through the antero-lateral part of the vaginal roof into the vagina, and then back through the postero-lateral part of the vaginal cul-de-sac behind the base of the lateral ligament into Douglas's pouch. The uterus is then removed, and after drawing the ends of the ligature into the vagina the peritoneal opening is closed, and, the intestines having been replaced, the abdominal incision is treated as after ovariectomy.

Freund¹ has more recently made certain modifications in his operation. I. To avoid accidental detachment of the peritoneum from the anterior wall of the pelvis during the operation, the incision through the peritoneum is to be shorter than that through the skin, so that the peritoneum at the inferior extremity of the wound may be stitched to the skin. II. Instead of passing a looped wire through the body of the uterus, for the purpose of steadying it, he uses the fenestrated ovariectomy forceps. III. By means of a trocar needle a ligature is passed from the peritoneal cavity to the vagina on one side of each broad ligament and then from the vagina to the peritoneal cavity on the other side. This ligature is made to enter and to leave the vagina at points very near together in the utero-vaginal attachment, so as to include as little vaginal tissue as possible. This ligature does not include the Fallopian tubes, the ovarian ligament, or the round ligament. It is tied and the ends are cut off. IV. To distinguish between the ligatures of the Fallopian tubes, of the ovarian ligaments, and of the round ligaments, he attaches to the end of the superior a slender piece of metal, to the next below a shorter piece, to the other none at all. This also facilitates the passage of the ligatures through the vaginal wound. V. He passes loops through the peritoneal flaps to facilitate the dissection of the uterus therefrom. VI. When the dissection along the anterior wall of the uterus is nearly complete, he makes a small incision from the vagina through the utero-vaginal attachment, and dilates this incision until it will

¹ Chicago Medical Gazette, April 20, 1880.

admit one or two fingers of the left hand. Then passing these fingers through this opening he inserts them into the uterine canal to facilitate the handling of the organ during the remaining part of its extirpation.

Such is Freund's operation for ablation of the uterus affected by malignant disease. Those who have thus far performed this operation for malignant disease have been Freund, Martin, Mueller, Olshausen, Baumgaertner, Schroeder, Winckel, Kocks, Credé, Oelschläger, and Noeggerath. Schroeder¹ declared at a meeting of the German Gynecological Society in 1878 that if five times out of six the disease should return, he would still operate. In this conclusion he will find few conservative surgeons to agree with him. Freund's operation is *ad hoc sub judice*. Time will decide as to its value.

At the risk of becoming tedious by repetition, I offer the following *résumé* of the methods of fulfilling the indications in treating this affection.

1st. Secure cleanliness, prevention of fetor, and diminution of hemorrhage and pain by the free use of warm vaginal injections of antiseptic and astringent character such as the following :—

R. Acidi carbolici (sol. sat.), ℥ijss.

Glycerinæ, Oj.

Aluminis sulphatis, ℥xiv.

Morphiæ sulphatis, gr. xvj.—M.

S.—Add one tablespoonful to two quarts of warm water, and use as a vaginal injection morning and evening by Davidson's or the fountain syringe.²

2d. Give an abundance of food *which the system can appropriate*, at regular intervals, bearing in mind that nutrition consists in the introduction into the blood, not into the stomach alone, of nutrient materials.

3d. Do not indulge in, what appears to be to a certain order of medical mind, the grim pleasure of making a fatal prognosis. As long as possible let the patient enjoy the "pleasures of hope." It is not the duty of the physician to hold constantly before her eyes the gloomy picture of a speedy and certain death which he is powerless to avert. No deception should be practised, and none need be, for these patients always suspect the truth and do not seek to be informed. Immediate relatives should have the facts plainly stated to them.

4th. Quiet pain by the systematic use of opium or one of its alkaloids. The use of the hypodermic syringe at a fixed hour every day is the most certain and frequently the most agreeable plan.

5th. If possible, remove the diseased part completely by surgical means.

6th. If complete removal be impossible, and the vagina, bladder, rectum, or pelvic tissues be involved, as a rule avoid surgical interference entirely.

¹ Am. Journ. of Obstetrics, Jan. 1879.

² A syringe of English manufacture, which I regard as superior to those above mentioned, has just been introduced here under the name of the syphon enema syringe.

7th. If the disease be confined to the uterus, and complete removal be impossible, practise partial removal or destruction of the growth by galvano-cautery, the scissors, scoop, or curette, or by actual cautery or fuming nitric acid.

8th. If the affection be entirely confined to the uterus, the propriety of its complete removal by laparotomy should be considered. This operation has, however, been thus far too little tested to render an absolute decision with reference to the propriety of its adoption possible.

Although, of course, there is a great deal of discomfort and of suffering inherent to the progress of this dreadful malady, it is surprising to see to how great an extent these may be mitigated by forethought and intelligent attention to detail. In one case we see a woman suffering almost constant pain, breathing an atmosphere vitiated by sickening odors, associating with persons whose every word and look are productive of increased sadness and depression, and looking forward with unvarying gaze to the grave as an issue for her troubles, scarcely more gloomy than her present place of abode. In another the ability and care of the physician have changed all this. The patient looks forward for the visit of her medical attendant with the certainty that a full dose of morphia hypodermically administered will give her twenty-four hours of freedom from severe pain. Experience has taught her that the antiseptic injections which she employs every four or five hours have the unquestionable power of almost entirely annihilating disagreeable odors, and that the well-regulated circulation of air and the repeated flushing of one chamber during the course of the day while she occupies another will give her pure and fresh air to breathe. She recognizes the fact that some influence other than her own has surrounded her with associates who prefer exaggerating the silver lining of the cloud which hangs over her, to contemplating its gloom, and the cultivation of thoughts calculated to create cheerful resignation, quiets and sustains the mind. Then, too, in the very depths of her heart flickers still a faint ray of hope. The worst is not known to her, and she lives in comparative comfort until the closing scene.

There is a peculiar nervous condition which develops in women, which deserves the name of carcinophobia. A dread of cancer suddenly seizes the woman, either from some physical reason like the recognition of some point of induration, or a moral one like the recent death of a friend from that disease, and losing all reason she becomes panic-stricken to a degree which renders her and all those who surround her utterly wretched. The assurances of the physician are either doubted or disregarded, and the unhappy patient falls into a state of despondency bordering upon acute hypochondriasis. Some years ago a very timid and sensitive lady, whose mother had died of cancer, came to me, from one of the largest cities of this country, by the advice of her physician, to be operated upon for cancer of the cervix uteri. She appeared so completely dazed by the announce-

ment of the diagnosis and prognosis on the part of her medical attendant, that she was scarcely aroused by the statement on my part, that she had no trace of cancer, and that the laceration of the cervix and fungoid degeneration, which had been mistaken for it, could be readily and certainly cured. In two weeks from the time that I first saw her she was seen with me by Dr. Choate, and was removed to his private asylum at Pleasantville, where, after six months' residence, she entirely recovered from a mental aberration which, in the opinion of Dr. Choate and myself, was wholly due to the injudicious announcement to her of an incorrect diagnosis.

CHAPTER XXXIX.

DISEASES RESULTING FROM RETENTION AND ALTERATION OF THE FŒTAL ENVELOPES.

Uterine Moles.

Definition.—By this term is meant the existence in the cavity of the uterus of a fleshy mass which cannot with propriety be classed among tumors or polypi, and which consists in the retention of a part or the whole of the fœtal shell, or of the placenta.

The appellation of mole is neither elegant nor appropriate, but it is sanctioned by use for so great a length of time that it is difficult to alter, and impossible to discard it.

History.—Ancient medical literature teems with theories, hypotheses, I might also say fables, upon this subject. It would be unprofitable even to enumerate the extravagant and baseless surmises indulged in upon it, but as an example I will mention that Aristotle,¹ Hippocrates, Galen, and the Latin authors regarded moles as due to a want of virtue in the seminal fluid, or to a superabundance of menstrual blood.

A certain superstition has attached to them even in modern times; thus, Capuron quotes Mahon for the following very curious assertion: "The housewives believe that moles not only take the forms of certain animals, but that they even walk, run, fly, try to hide themselves, even to re-enter the womb from which they came; indeed, if no obstacle be offered they will kill the woman just delivered of them." Levet pointed out the fact that they are only the fœtal shell, which by the establishment of a low grade of nutrition continues to exist.

Pathology.—As the fœtus passes into the uterus it is enveloped by its proper membranes, the amnion and chorion, and these are surrounded by a prolongation of the hypertrophied mucous lining of the organ, called the decidua reflexa. Between the end of the second and the end of the third

¹ Capuron, *Mal. des Femmes*, p. 268.

month the placenta is formed, and the villi of the chorion not engaged in its development become atrophied. Before that time the fœtal shell is quite thick, and is everywhere in close communication with the uterine walls.

Many adverse influences may destroy the life of the fœtus, and generally as a result, the whole of the products of conception are swept away by uterine contraction. But sometimes the shell of membranes clings to its attachment, and for an unlimited period holds its position in utero. This, absorbing nourishment from the uterine vessels, becomes to a certain extent organized, and constitutes the disease under consideration. When expelled from the uterus a mole is usually found to be somewhat ovoid in shape, and to resemble the product of conception at the second month. It differs from this, however, in its dark brown color and apparent lack of vitality.

Causes.—There are many intrauterine growths and collections which, being cast off, may be mistaken for moles, as, for example, masses of coagulated blood, polypi, decidual membranes, etc., but a true mole never exists except as a result of conception.

Symptoms.—The condition generally announces itself by these symptoms :—

- Menorrhagia or metrorrhagia ;
- Hypogastric weight and uneasiness ;
- Uterine tenesmus ;
- Slight constitutional disturbance ;
- Cessation of signs of pregnancy.

Physical Signs.—The diagnosis of uterine moles is very obscure and often uncertain. When a patient who has exhibited all the signs of pregnancy suddenly ceases to do so and presents those just enumerated, a mole may be suspected. Vaginal touch will reveal the fact that the uterus is enlarged, and the uterine probe may assure us that its cavity contains some solid substance, but the removal and examination by the microscope of a portion of the mass, will alone enlighten us as to its character. The condition being suspected, the cervix should be dilated by tents, and uterine action excited by ergot in order to settle the question.

Differentiation.—This disease may be confounded with—

- Submucous fibroid ;
- Sarcoma or cancer of the uterine body ;
- Subinvolution.

To the finger passed into the uterus, a fibrous tumor is usually hard, smooth, and resisting; while a mole is soft, spongy, and yielding to the touch, but this may prove deceptive.

Sarcoma and cancer may be known by the peculiar sensation yielded to touch, their fetid discharges, the constitutional depreciation attending them, and their microscopical characteristics.

Subinvolution demonstrates upon exploration the fact that the uterus is empty. It also frequently follows delivery at full term, while a mole rarely does so.

From all these conditions the differentiation may be positively accomplished in one way and one way only; dilatation of the cervix, removal of a small portion of the mass, and examination of this by the microscope.

Prognosis.—The prognosis is favorable.

Treatment.—The cervical canal should be fully dilated and an effort made to arouse uterine contraction by persistent use of ergot. Should this fail, the mass should be cautiously removed by the large uterine scoop, or by traction by means of the placental forceps.

Cystic Degeneration of the Chorion, or Uterine Hydatids.

Definition.—The chorion, remaining attached to the uterine walls after expulsion or death of the embryo, sometimes undergoes a peculiar metamorphosis which receives this appellation. True hydatids, that is, cysts due to the presence of the acephalocyst, are very rarely met with in the uterus. Their extreme rarity may be judged of from the fact that Rokitsansky declares that he has never discovered them but once. Dr. Graily Hewitt¹ believes, that, when they exist in the uterine cavity, it is probable that they are discharged into the peritoneum from rupture of a cyst in the liver, and then pass through the uterine wall. Not only do the grape-like cysts, making up what is commonly known as uterine hydatids, differ from true hydatids in absence of the acephalocyst, they are also unlike them in their appearance and formation. The former consist of little sacs in a series, as if strung together; the latter are closed sacs, one within another.

Synonyms.—This affection has been described under the names already given, and under those of vesicular mole, in contra-distinction to fleshy mole just considered; hydatidiform mole; and hydatid pregnancy. In most works it is described only as a variety of mole.

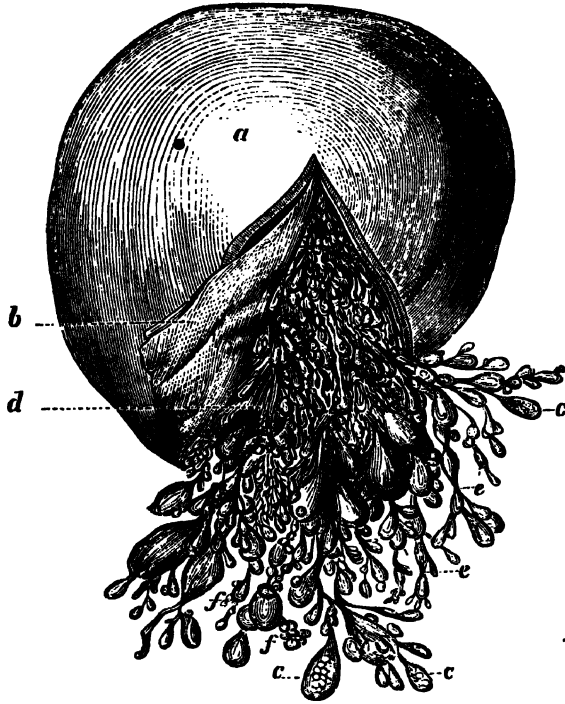
Pathology.—Remaining in connection with the uterine walls after the expulsion of the fœtus, and absorbing nourishment which it no longer appropriates, the villi of the chorion undergo a kind of dropsical swelling, which results in the grape-like bodies styled hydatids.

It is probable that after the end of the third month, no such degeneration can occur in the secundines, for after that period the placenta is formed, the villi which existed at its site become vascular, and those over other parts of the surface of the fœtal sac undergo atrophy. It is true that at parturition at full term, masses of these sacs have, in rare instances, been expelled; but in such cases it is probable that some portion of the chorion had begun to degenerate at an early period of conception.

¹ Op. cit., p. 75.

Causes.—we know of no influences which excite this form of degeneration in a retained chorion.

FIG. 238.



Cystic degeneration of chorion. (Boivin and Dugès.)

Symptoms.—Sometimes the disease demonstrates its presence by all the signs of pregnancy, abdominal enlargement being one of the most prominent. Suspicion of the existence of something abnormal is very generally excited at an early period by some or all of the following signs:—

- Nausea ;
- Discharge of clear or bloody water ;
- Hemorrhage ;
- Uterine tenesmus ;
- Constitutional disturbance ;
- Discharge of little cysts.

Physical Signs.—Vaginal touch will reveal the uterus enlarged, and the os patulous, as if the cavity of the organ were filled with something, and conjoined manipulation will prove this to be fluid and not solid.

If with these signs the fact could be ascertained that cysts had been discharged, the diagnosis would be complete. If not, the cervix should

be dilated, in order that the cavity of the body may be explored by touch, or that a portion of the mass may be removed for inspection.

Differentiation.—This disease might very readily be confounded with—

Pregnancy;

Polypus;

Sarcoma or cancer of the body of the uterus.

From pregnancy it could generally be distinguished by the very rapid development of the uterus, the presence of watery and bloody discharges, and the absence of quickening, ballottement, and other signs of that state.

From polypus a differentiation could readily be made by tents, the uterine sound, and the microscope.

Sarcoma and cancer would be known by fetid discharge, great constitutional decadence, and the smaller size of the uterus than in hydatids.

Prognosis.—If the case were one of true hydatids due to the acephalocyst, the prognosis would be very grave. If it were proved to be one of cystic degeneration of the chorion, it would be favorable.

Treatment.—The treatment should consist, 1st, in full dilatation of the os and cervix uteri by tents, and then, if necessary, by hydrostatic dilators; and, 2d, in excitation of the expulsive powers of the uterus by the free use of ergot. Should this drug fail in establishing the desired contraction, a large scoop, or, if possible, the hand, should be gently passed into the uterus, and the mass be evacuated. During this time, should alarming hemorrhage occur, it should be controlled by the tampon and by tannic acid, or sulphuric acid given internally.

In the management of such cases the difficulties do not lie in the way of treatment, but in that of diagnosis. This being once fully established, treatment becomes simple.

CHAPTER XL.

DYSMENORRŒA.

WE have now arrived at the most appropriate place for the consideration of the derangements of the process of menstruation; and first among these we take up that of which the name heads this chapter.

The process of menstruation, by which the human female discharges from the uterus a certain amount of blood once in every lunar month, depends upon three phenomena which are intimately connected together: 1st, the spontaneous escape of one or more ovules from the ovaries; 2d, engorgement of the erectile vascular stratum surrounding and supplying the uterus; and, 3d, rupture of the vessels supplying the endometrium,

together with rapid desquamation of its epithelial cells. Until the year 1821, when Power first broached the subject, the connection between ovulation and menstruation was unsuspected. Even then it was not established until the writings of Negrier in 1840. After this the investigations of Pouchet, Bischoff, Coste, and Raciborski carried conviction to the minds of most, and caused the general acceptance of the theory. There are now those who doubt the connection of the two phenomena, but I believe that I am correct in saying that they are decidedly in the minority, and that the ovular theory is at present almost universally admitted. That menstruation sometimes occurs after removal of both ovaries I know by experience in one of my own cases of ovariectomy, and Dr. Ritchie¹ has proved that it may occur without ovulation, as ovulation often takes place without it. But this is not the time for an examination into the merits of the lengthy discussion which has taken place concerning the subject. I prefer to avoid it, and to express the view which I believe now to prevail, and to which I give my own adherence.

We assume, then, that the extrusion of one or more ovules from the ovaries, which takes place under some unknown influence, is the exciting cause of menstruation; let us inquire into its mode of action. The uterus is surrounded by a network of fine and tortuous vessels, which envelop it as a stratum or layer, extending through the broad ligaments to the ovaries. Outside of this vascular network delicate muscular fibres, extending from the uterus, run, encircling its vessels. When an ovule begins to approach the circumference of the ovary, congestion of this organ occurs in consequence of irritation. This irritant effect is transmitted to the muscular layer surrounding the vascular network in and around the uterus. It contracts, impedes sanguineous flow, and causes engorgement, which in the membrane lining the uterus, and in all probability in that lining the tubes, causes a rupture and flow of blood into the uterine cavity. This engorgement constitutes the "erection" alluded to by Rouget in his "*Récherches sur les Organes érectiles de la Femme.*" Blood flowing from ruptured vessels collects in utero, whence it flows through the cervix into the vagina and from thence it passes out of the vulva.

When all the elements connected with this process are in a perfectly normal state, it occurs without creating other discomfort than a sense of fullness about the pelvis, slight pain in the back and loins, and a general sense of lethargy. But if an abnormal condition should exist, either in the structure from which the blood pours into the uterus; in any of the surrounding parts or organs which undergo congestion; or in the canal by which it passes into the vagina, menstruation often becomes excessively painful, and in some cases undermines the health by the intensity of suffering which it induces. This state receives the name of dysmenorrhœa, a term derived from *δυσ*, difficult, *μην*, a month, and *ρῆω*, I flow.

¹ Ovarian Physiology and Pathology.

Pathology.—Any condition, whether general or local, affecting the structure of the uterine walls, the ovaries, or the surrounding areolar or serous tissues, so as to render the nerves supplying these parts morbidly sensitive, may produce pain in connection with the first part of the process. Anything impeding the escape of blood from the uterus or vagina may produce it by interference with the second part. For example, a general condition resulting in neuralgia of the uterine or pelvic nerves, or a local inflammation altering their state, might readily create pain in the first stage, while either a natural or acquired stricture of the cervix would probably do so in the second.

As a general rule, dysmenorrhœa is due to one or more of the three following factors: 1st, a depreciated condition of the constitution, beginning usually either in the nervous system or blood, which creates a tendency to neuralgia; 2d, an abnormal state of the uterus; or 3d, a diseased state of the ovaries. In a woman in whom the nervous system, the uterus, and the ovaries are normal, it is highly improbable that this condition would ever arise. Every practitioner can recall numerous instances in which any one of the three conditions mentioned has sufficed to establish it, and as this is true of each of them separately it is more so of a combination of the three.

Every case should be examined from this standpoint in practice, and the treatment adopted should be governed by the discovery of the existence of one or more of these conditions as causative agents:—

Varieties of Dysmenorrhœa.—For convenience of study, dysmenorrhœa may be divided into the following varieties:—

- Neuralgic dysmenorrhœa;
- Congestive or inflammatory dysmenorrhœa;
- Obstructive dysmenorrhœa;
- Membranous “
- Ovarian “

Seat of Pain in Dysmenorrhœa.—Upon this point our knowledge is not certain. It is probable that in the first three varieties the pain is seated in the uterus, in the ovaries, or in the cellular tissue or peritoneum surrounding the pelvic viscera. Some of the most intractable cases with which I have met have been due to pelvic peritonitis, which, even after inflammatory action has subsided, has left the nerves supplying these parts in so sensitive a state that pain, or even a recrudescence of inflammation styled menstrual pelvic peritonitis, is excited in them by the process of menstrual congestion. It is often very difficult to decide as to the exact seat of pain. Even a physical exploration instituted during the menstrual period may fail to enlighten us.

The practitioner who regards dysmenorrhœa as a disease, and applies to every case a uniform plan of treatment, will rarely meet with success in its management. He should view it as a symptom of an abnormal con-

dition which should, as far possible, be discovered and removed. Although, even when acting thus, cases will be met with in which he will be baffled, it will be gratifying to perceive how rarely these will occur. The great importance of differentiating the varieties mentioned, and adopting appropriate plans of treatment, calls for a separate study of each.

Neuralgic Dysmenorrhœa.

This variety depends upon no appreciable organic disorder of the uterus or its appendages, but merely upon a peculiar state of the nerves, which, under the stimulating influence of congestion, produces pain.

Causes.—There are many agencies which at times so alter the healthy state of the nerves of the stomach as to produce in them, at each period of digestion, pain, which is called gastralgia or gastrodynia. Similar agencies may occasion neuralgia of the nerves of the eye, or of those supplying the tissues of the head and face. In like manner they may affect the uterine nerves whenever these are inordinately excited from menstrual congestion. The same patient who from slight excitement or fatigue develops supra-orbital neuralgia, will often, from the same causes, suffer from neuralgic dysmenorrhœa.

The causes which generally induce it are—

The neuralgic diathesis ;

Chlorosis or plethora :

Certain blood states, as those of malaria, gout, and rheumatism ;

Luxurious and enervating habits ;

Habits deteriorating the nervous system, as onanism or excessive venery.

Symptoms.—Pain may show itself before the flow has been established, and disappear as soon as it comes on ; or it may continue with varying intensity throughout the duration of the menstrual discharge. The patient usually complains of a sharp, fixed pain over the pelvis, down the loins, or in some distant part of the body. I once saw a patient who, during each period, suffered intensely from neuralgic pain on the outer side of one little finger, and another who before the flow was established experienced for several days a violent pain at the root of the nose.

In some cases the pain seizes the patient very suddenly, and becomes so agonizing in character as to render her almost delirious. She will toss wildly upon her bed, and give evidence of the most severe physical suffering. Then in a few hours the pain will almost as suddenly abate, and for the rest of the menstrual period exist only in very moderate degree.

Differentiation.—When the pain is felt in the uterus, it presents nothing expulsive in its character ; the flow of blood is steady, and not interrupted ; no clots are discharged by spasmodic efforts, and physical examination discovers no obstruction. These facts generally distinguish neuralgic from

obstructive dysmenorrhœa, though sometimes differentiation is very difficult.

From the congestive form it is differentiated by absence of constitutional disturbance, and by its being habitual and not exceptional. It may be distinguished from the inflammatory variety, by absence of the ordinary signs of endometritis, and of ovarian and periuterine inflammation. There is also absence of leucorrhœa and pain, as well as of the physical signs of inflammation, in the intervals of menstruation.

Prognosis.—If a patient affected by neuralgic dysmenorrhœa be able and willing to effect a decided alteration in her mode of life, the prospect of recovery is good. Should no such change be attainable, it is decidedly unfavorable.

Treatment.—The first duty of the physician should be to discover the cause of the development of neuralgia in the performance of the menstrual function, and the second to endeavor to remove this. Neuralgia of the face and head is rarely a primary affection, and consequently resists remedies directed especially to it. It generally results from some focus of irritation, as, for example, a decayed tooth, or a plug of hard wax in the ear, or from some blood poisoning; and when the cause is removed it disappears. So with the disorder which we are considering. If the rheumatic or gouty diathesis exist, it should be treated by colchicum, guaiac, and vapor baths. The skin should be kept warm and active by wearing flannel over the whole body in winter, and a mild, equable climate should be chosen during the cold months of the year. Should a delicate state of the nervous system have been engendered by habits of luxury, indolence, or dissipation, the patient should be sent to the country, where an out-of-door life, horseback exercise, early hours of retiring, and plain, wholesome food, may exert a decidedly alterative influence. Chlorosis and plethora should be treated, the one by ferruginous and nervous tonics, fresh air, food, and cheerful surroundings; the other by strict diet, venesection, cathartics, and other depletory means. Malarial toxæmia should be treated by change of residence, quinine, and iron. A sea voyage will often accomplish an excellent result in neuralgic dysmenorrhœa by its alterative influence, whatever be the cause of the neuralgic state, and the same may be said of surf bathing.

In addition to these general means, benefit may be obtained from the use of some which are local. The occasional passage to the fundus of the uterus of a uterine sound, the retention in utero of the galvanic pessary, which will be described when speaking of amenorrhœa, the use of tents, and the systematic employment of the continuous or galvanic current, one pole over the sacrum or against the cervix and the other over the hypogastrium, will often prove very serviceable.

Parturition often accomplishes an excellent result, and in many cases cures the affection entirely.

Besides these means there are certain anti-neuralgic remedies which act more or less as specifics in this form of dysmenorrhœa. Foremost amongst these is *apiol*, a yellowish, oily substance, obtained from the *petroselinum sativum* by the action of alcohol and filtration with animal charcoal. It is prepared by Joret and Homolle, of France, in the form of capsules, and is sold by druggists throughout this country. The dose of these is one capsule night and morning during menstruation. The tincture of *cannabis indica*, in doses of twenty-five drops every fourth hour while pain is severe, is also beneficial, as is also the hydrate of chloral in ten grain doses every eight hours. Where a spasmodic element appears to exist in addition to the neuralgic, suppositories of butter of cocoa containing each a quarter of a grain of extract of belladonna will often give great relief; they should not be repeated oftener than once in every eight hours. Under these circumstances, too, great benefit will often follow the use of enemata of tincture of *assafoetida*, two to three drachms in a gill of warm water, or of ten grain doses of chloral dissolved in half a pint of warm gruel. Placing the patient in a very warm general bath, for from twenty to thirty minutes, is likewise often productive of great relief.

Congestive or Inflammatory Dysmenorrhœa.

Definition.—At each menstrual epoch an active congestion occurs in the mucous membranes of the Fallopian tubes and uterus as well as in the ovaries, and, probably, to a less degree in all the pelvic tissues. When any abnormal influence renders this excessive, it naturally produces pain in the nerves intervening between the distended vessels. This excessive hyperæmia, which may result from a mechanical cause, as displacement of the uterus, or from a vital cause, as the peculiar condition which we know as inflammation, gives rise to a variety of painful menstruation which has been styled congestive or inflammatory, and which has been synonymously styled accidental in contra-distinction to those forms which are habitual.

The state of inflammation which so alters the condition of the nerves immediately affected by ovulation or menstruation, may exist in or around the uterus, in the peritoneum covering it, in the ligaments which sustain it, or in the areolar tissue of the pelvis.

In a great many cases inflammation of the uterine mucous membrane is the cause of this form of dysmenorrhœa. The existence of disease in this part causes, perhaps, little pain until the erythism engendered by menstruation occurs. Then great local excitement takes place and dysmenorrhœa shows itself.

Causes.—It may result from almost any pelvic inflammation, or from any influence which exaggerates and prolongs the congestion excited by ovulation. Chief among these may be mentioned—

General plethora ;
Exposure to cold and moisture ;
Sudden mental disturbance ;
Sluggishness of portal circulation ;
Displacement of the uterus ;
Fibrous tumors ;
Areolar hyperplasia ;
Endometritis ;
Periuterine cellulitis ;
Pelvic peritonitis.

Some of these causes, even without exciting true inflammation, may keep up a state of hyperæmia in the uterine vessels, which, being augmented at menstrual epochs, creates pressure upon the neighboring nerves and consequently pain.

Symptoms.—A patient who has previously menstruated painlessly is seized during a period with severe pelvic pain accompanied by diminution or cessation of the discharge and considerable constitutional disturbance. The pulse becomes full and rapid, the skin hot and dry, and the eyes suffused. There is severe pain in the head, with nervousness, restlessness, and sometimes, though rarely, a little delirium. There may be in addition rectal and vesical tenesmus and diarrhœa. In cases in which a local inflammation exists, as the flow begins, or before that time, the patient suffers from dull, heavy, fixed pelvic pain, which lasts until the process is ended, and often even after it has done so.

Differentiation.—If the attack be due to hyperæmia merely, without inflammation, the constitutional disturbance and suddenness which characterize it will mark its difference from the neuralgic and obstructive forms, as the absence of signs of inflammation in the intervals will do from the inflammatory. If it be due to the influence of existing pelvic inflammation, it will usually be marked by pain during the inter-menstrual periods, difficult locomotion, fatigue after exertion, leucorrhœa, etc.

Prognosis.—This will depend upon the prognosis of the condition which has given rise to it. If that can be removed, the dysmenorrhœa, which is one of its symptoms, will disappear ; if not, it will continue without material diminution. If the cause of the symptoms be a fibrous tumor, pelvic peritonitis or periuterine cellulitis, or even an irremediable displacement, the probability of relief is, of course, not at all great.

Treatment.—As in the neuralgic variety, the source of the evil should be carefully ascertained before remedial measures are adopted. If it be due to plethora, the lancet, cathartics, strict diet, exercise, and fresh air will be indicated. Should the attack be accidental and have occurred from exposure to cold and moisture, opiates, diaphoretics, and sedatives will give speedy relief. In case a sluggishness of the portal circulation exists, this should be stimulated to greater energy by mercurial cathartics

and a change in the habits of life from sedentary to active. A displaced uterus is often kept in a constant state of congestion, which can be relieved only by properly sustaining the organ. This, according to my experience, is the most frequent of all the causes for congestive dysmenorrhœa. In some cases a slight degree of retroversion or anteversion will produce it, while in others direct descent will be found to be its cause. In many of these cases it will, upon recognition of the displacement, be scarcely credited by the practitioner that it is sufficient to be productive of the result. Yet replacement of the uterus, and removal of superincumbent weight by means of a skirt supporter and abdominal pad, will give such complete relief as to put all doubts at rest. If a fibrous tumor be the cause, a cure will depend upon its susceptibility of removal.

Should any local inflammation be discovered as the cause of the evil, this, and not one of its many results, should be the subject of treatment.

Obstructive Dysmenorrhœa.

If, after the collection of blood in the uterus, any obstruction exist which prevents its escape into and through the vagina, a violent spasmodic pain is excited which often amounts to uterine tenesmus. To this form of painful menstruation the name of obstructive dysmenorrhœa has been applied. The obstruction may exist in the os or cervix uteri, in the vagina, or at the vulva, where that canal is partially closed by the hymen.

Pathology.—If any organ be filled with fluid beyond the point of tolerance, as, for example, the bladder, stomach, or large intestine, violent contractions of the distended fibres, which make up its walls, are excited, and spasmodic efforts, which have received the name of tenesmus, are established. If evacuation result from these, relief is obtained; if not, contractions continue for a long time. When occurring in the uterus, they present the symptoms which characterize the affection which now engages us.

Causes.—The special causes of such obstruction are—

- Congenital or acquired contraction of the cervical canal;
- Flexion or version of the uterus;
- Vaginal stricture;
- Small polypus in utero;
- Obturator hymen;
- A fibroid in the parenchyma of the neck.

Any one of these causes may produce the result by partially occluding the cervical canal, so as to allow of the escape of fluid imperfectly and painfully. Contraction of the cervix may be congenital, or may result from inflammation of the mucous lining of the canal, or diminution of its calibre by contraction of the parenchyma, from the use of strong caustics within the os, or other cause. The last cause is a prolific one, the con-

dition commonly resulting from the passage of the actual cautery or potassa cum calce into the canal of the cervix. Flexion obstructs the canal by creating an angle in its course. Let a tube of gutta-percha be slightly curved and no obstruction will exist, but if it be sharply bent upon itself complete occlusion will occur. Versions much more rarely produce the difficulty, but sometimes, the os being, by reason of the displacement, pressed very firmly against one wall of the vagina, a partial obstruction is produced.

Some time ago a young girl presented herself at my clinique, at the College of Physicians and Surgeons, declaring that at every menstrual epoch she suffered from the most intense bearing-down pains, which exhausted her greatly. Upon examination I found a partial closure of the vagina, the result of sloughing during typhus fever, which had produced an accumulation of blood above it. This excited uterine contraction, and each effort caused the expulsion of a small amount of the fluid collected above the stricture. In like manner the hymen may prevent free escape and produce uterine tenesmus.

Sometimes a small polypus comes down to the os internum and rests upon it, obstructing the egress of fluid, but permitting the passage of a probe into the uterine body. It acts upon the principle of the ball valve, and by so doing produces the worst features of obstructive dysmenorrhœa.

Symptoms.—After menstruation has continued for some hours, and sufficient blood has been collected in the uterus to distend it, a severe spasmodic pain occurs over the pelvis, which has been styled “uterine colic.” This rapidly passes into a violent expulsive effort like the contractions attending miscarriage, which in time causes the passage of a certain amount of blood. Then severe pain ceases for a time, until further distention and obstruction occur, when the process by which the uterus empties itself is repeated.

It will be clear to the observer that the difficulty develops itself by three steps:—

- 1st. Some obstruction causes a collection of blood in the uterus;
- 2d. This excites uterine contraction by distention;
- 3d. Uterine contraction, to a limited degree, frees the uterus and gives ease.

This is the pathology of the condition, whether the obstruction exist in the vagina, at the vulva, or in the cervical canal. If it exist at the last point, the efforts of the uterus will generally expel a small clot, and then a gush of imprisoned blood will follow, much to the patient's relief.

Differentiation.—The symptoms just related are so marked and decided that little difficulty will generally be experienced in determining as to the pathology of the case. Before such a decision is arrived at, however, physical exploration will usually place the matter beyond a doubt. The absolute obstruction may generally be demonstrated by difficulty in the

introduction of a probe into the cavity of the uterus. Should the obstruction exist in the vagina, the finger will detect it, and, if in the cervix, the probe will do so with almost as great precision.

It cannot be denied, however, that in exceptional cases a degree of constriction at the internal os which will admit the sound may, by some spasmodic action occurring at menstruation, offer an obstruction to escape of blood. Indeed, I feel that, in all the varieties of dysmenorrhœa, spasm of the fibres of the os internum plays a much more important rôle than is generally appreciated. It is this fact which explains the occurrence of severe pain at certain periods, while at others there is little or none. In some women there appears to be a regularity about this irregularity, the pain occurring without assignable reason every second month.

Prognosis.—This will depend entirely upon our ability to overcome the mechanical obstacle. Should it not be possible to remove this, the constantly repeated distention of the uterine cavity and consequent effort required for emptying it, will frequently result in endometritis. If uterine displacement exist, it should be treated by mechanical means; any narrowing of the vagina should be overcome; and if possible any obstructing neoplasm removed. If the indication in a given case can be completely fulfilled, the prognosis is good, but not otherwise.

Treatment of Cervical Constriction.—Should it be discovered that the cause of difficulty consists in congenital or acquired constriction of the cervical canal, the condition may be remedied by two methods, dilatation and incision, the means for accomplishing which may be thus presented at a glance :—

Dilatation.

By sounds;

By tents;

By expanding instruments.

Incision.

Simpson's method;

Sims's method;

Combined method.

If the constriction be due, as it very commonly is, to flexion forwards of the body or neck of the uterus, the point of stricture will usually be found near the os internum; if it be due to congenital deformity without flexion, it will usually be found at the os externum; while if an escharotic have created the difficulty, the entire length of the canal may be found deficient in calibre.

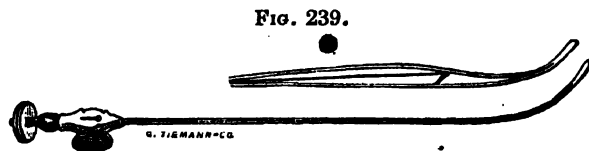
About the year 1832, Dr. Mackintosh, of Edinburgh, established the practice of dilating the constricted cervical canal by metallic rods, as is done in stricture of the urethra. His plan was to introduce a very small sound, leave it for a short time in position, and then follow it by others gradually increasing in volume. He declares, in reporting upon the practice, that

out of twenty-seven cases, twenty-four cures were effected. The sounds by which dilatation may be best accomplished are graduated ones of metal of three or four sizes. Those of Kammerer are very convenient. Dilatation by their means should be slowly and cautiously accomplished. A sound being passed should be left in position for several minutes, and upon its removal another should be inserted, until the distention deemed practicable at one sitting is attained. There can be no question as to the efficacy of this plan, though it is probable that some of the cases relieved by Dr. Mackintosh were instances of neuralgic and not obstructive dysmenorrhœa.

When this method is to be adopted the patient should be anæsthetized, and by means of graduated sounds the cervix, which has been held by a tenaculum, should be dilated by the application of a little force.

The same result may be accomplished by the use of tents of sea-tangle or tupelo, but the danger attending this method should always be considered before it is selected.

Another method, which has been adopted with advantage in many cases, consists in the dilatation of the constriction by means of expanding instruments. One of the best of these is shown in Fig. 239.



Priestly's dilator for the cervix.

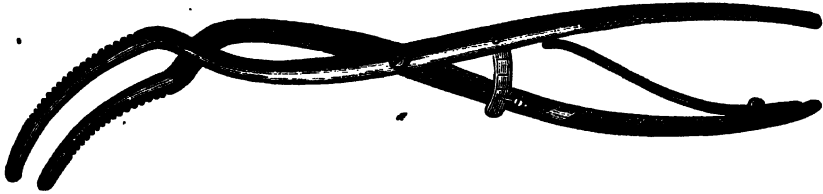
A modification of Holt's stricture dilator is likewise employed for this purpose, and every surgical instrument maker's shop will display many others.

Ball of Brooklyn, and Ellinger of Germany, accomplish complete cervical dilatation by the use of powerful divulsors, which, the patient being anæsthetized, stretch the canal widely open at the expense of the tissues which form it. I have seen the operation performed, and must say that it is to all appearances shockingly brutal, and seems to be a dangerous procedure. Excellent reports are nevertheless made of its results, and the day has passed when any one should allow prejudice to bias his judgment in reference to any surgical procedure, the danger of which may possibly exist only in appearance.

Although a great deal has been said by high authority of late years against dilatation and in favor of incision in these cases, an opposite position was taken by many prominent men in a debate before the American Gynecological Society in 1878. Schultze, of Jena, combines the use of laminaria tents with decided dilatation by means of the instrument shown in Fig. 240. After full dilatation by tents of laminaria, the dilated cer-

vix is still further distended by the two-branched instrument just shown. The entire procedure is accomplished under Lister's antiseptic method.

FIG. 240.



Schultze's dilator.

I have satisfied myself that the success of these methods, like that of the cutting operations adopted for the same purpose, depends not on the way in which they are performed, but upon the lengthy maintenance of dilatation after them by retention in the cervical canal of a glass plug an inch and a half or an inch and three-quarters long. By this the dilatation obtained by operation is perpetuated until a permanently free cervical canal is secured. It matters not whether the original distention was accomplished by one method or by another.

Whatever plan be adopted, the antiseptic method, with the exception of the spray, should be observed strictly.

In 1843, Prof. Simpson, of Edinburgh, advocated and practised cutting through the walls of the cervix, and thus gaining space without dilatation. He employed a single-bladed hysterotome, represented in Fig. 241.

FIG. 241.

G. SIMPSON—CO.
Simpson's hysterotome.

This instrument is introduced without a speculum, the patient lying on her left side. The hysterotome, with its blade concealed, is guided by the index finger up to, and if necessary, as is very rarely the case, through the os internum. If the cervical canal be too small to admit it, previous dilatation should be practised by tents. Being placed in position the blade is thrown out, the force being increased as it is withdrawn to the os externum. By thus increasing the pressure upon the handle of the blade, the incision is made wider at the lower than at the upper end of the canal. The instrument is then reintroduced and the other side incised in a similar manner, and the surface is brushed over with the solution of persulphate of iron.

To accomplish the incision of both sides simultaneously, a number of

double hysterotomes have been devised with two blades instead of one. That of Dr. Greenhalgh, of London, has become popular. A very simple one devised by Mr. Stohlmann, of this city, is represented in Fig. 242, and a very excellent hysterotome is that of White, shown in Fig. 243.

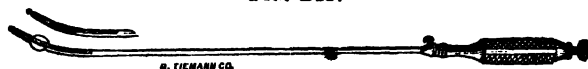
FIG. 242.



Stohlmann's hysterotome.

Since Dr. Simpson introduced this plan of treatment, several modifications of it have been recommended, but very little improvement had been attained until the introduction of Dr. Marion Sims's method. This consists in exposing the parts fully to view and replacing the bistourie caché

FIG. 243.



White's hysterotome.

by the knife or scissors, guided by the eye of the operator. It is an axiom that whatever secures clearness of observation conduces to good surgery. Darkness and bad surgery go hand in hand. For this reason Sims's method is far superior to Simpson's. It puts this operation on a level with those practised in other departments of surgery, and lifts it out of the field of uncertainty.

The operation which I proceed to describe is that which I perform, and is almost identical with the original operation of Sims. The vagina having been thoroughly syringed out with a 1 to 30 solution of carbolic acid, the patient is placed in Sims's position and his speculum is introduced. The vagina is then filled with carbolized water, which remains in it all through the operation, and if the operator is careful the operation may be performed almost under water, so thoroughly does it bathe the vaginal cervix.

The cervix is now drawn well down by a tenaculum, and, by means of a long, slender bistoury, like that of Sims, an incision is made from and a little above the os internum uteri through the cervical tissue and through the os externum, so as to cut entirely through the vaginal portion of the cervix at its lowest part. Then the other side is similarly cut, and a glass plug one and a half inches long is, as soon as active hemorrhage has ceased, pushed by the finger through the severed os internum, and kept

in place by a tampon. The upper portion of this has been saturated with the following antiseptic and astringent solution:—

R. Aluminis sulph. 3j.
Zinci sulph. 3j.
Cupri sulph. 3j.
Glycerinæ, 3j.
Aquæ, Oj.—M.

The lower portion of the tampon consists merely of carbolized cotton.

There is very little danger from hemorrhage when the cervix is not cut up to the vaginal junction, and the patient is carefully watched.

The tampon is removed in thirty-six hours, the vagina thoroughly carbolized, and a pessary, small and loosely fitting, like that shown in Fig. 170, is put in position. After this, carbolized vaginal injections should be used twice in every twenty-four hours, the patient is kept in bed for a fortnight, and the glass stem and pessary are kept in position for two months. The former does not interfere with menstruation, and when it is removed the healing process has finished, and contraction is much less likely to occur than it would be if no stem were employed, or one were kept in place for ten days only.

The influence which invalidates this operation is, I am convinced, the contraction which attends the reparative process. Let this process go on to completion, contraction being rendered impossible, and a full and wide canal will be secured as a result of the operation. The stem goes only within the os internum; not into the body of the uterus; and I have seldom seen it do harm; nevertheless, it should be carefully watched.

Like all other operations, whether bloody or bloodless, upon the uterus, antisepsis should be observed, with the exception of the spray.

The results of incision of the cervix, when practised in suitable cases, are sometimes very gratifying. In cases, however, in which the cervical tissue has undergone atrophy, or become hard and contracted, it is often impossible to keep the canal pervious. It gradually contracts in spite of all that can be done to oppose its doing so.

Treatment of Cases Dependent upon Flexion or Version.—Should version be the cause of dysmenorrhœa, it should be relieved not by operation, but by the means already mentioned when speaking of that displacement. If the difficulty be due to flexion, and more particularly to ante flexion, two indications offer themselves for its relief: 1st, to straighten the bent canal by keeping the body of the uterus erect; 2d, to effect the same end by surgical operation.

If a uterus be flexed below the vaginal junction, it is evident that obstruction to the menstrual flow will occur at the point of flexure, and equally evident that an incision through both sides of the canal would not overcome this by straightening it, while a single incision through the posterior wall would do so. In 1862 Dr. Sims conceived and practised such

an operation successfully. This will be found described in the chapter on flexion. It is unquestionably the procedure most applicable to the relief of dysmenorrhœa due to ante flexion.

Treatment of Vaginal Stricture.—This condition, which may be congenital, or be induced by syphilitic or cancerous disease, or by sloughing, if so complete as entirely to obstruct the canal, produces amenorrhœa. If it be a pervious stricture, it may result in dysmenorrhœa.

The affection may be treated by three methods: dilatation by large bougies, dilatation by tents, and incision. If syphilis be ascertained to be the basis of the local disorder, constitutional means should at the same time be resorted to.

Treatment of Dysmenorrhœa from Polypus.—Should the presence of a small polypus be discovered, the cervix should be dilated by tents and the growth removed.

Treatment of Obturator Hymen and Fibroids.—The first should be incised with extreme caution, and the second removed, if possible, by one of the methods mentioned under the head of fibroids.

Membranous Dysmenorrhœa.

Definition.—This variety of dysmenorrhœa consists in the expulsion of organized material from the uterine cavity, at menstrual periods, which is found upon microscopical examination to consist of the lining membrane of the uterus itself. This may consist of a sac, representing the triangular cavity of the body of the uterus with its three openings, or it may come away piecemeal as shreds or strips of mucous membrane.

Observers, since the time of Morgagni, have recognized this form of disordered menstruation, but looked upon the mould cast off as formed of false membrane, and as being a result of croupy or diphtheritic endometritis. For the true explanation of the phenomenon we are indebted to Simpson, Oldham, and Virchow.

Pathology.—Dr. Oldham's opinion, which strikes me as the most rational, not only upon theoretical grounds, but from close observation of those cases which have come under my notice, is that at some time during the intermenstrual period, the entire lining membrane of the uterus is lifted from its base and separated, so as to be ready for extrusion at one of the next menstrual crises. Virchow declares that a deciduous membrane, similar to that of pregnancy, forms, and for this membrane he proposes the name of the "menstrual decidua." Dr. Oldham believed that congestion of the ovaries gave rise to this remarkable phenomenon, by transmitting an irritant influence to the uterus. However inaugurated, this process appears to prepare the membrane gradually for complete detachment and extrusion at a menstrual period, when it is expelled. Simpson, denying the causative influence of inflammation in the production of the menstrual decidua,

regards it as a product natural to the uterus as to function, but unnatural as to time, circumstances, and frequency of development.

An entire membranous cast, when washed and examined by the naked eye, is found to be triangular, with three openings, two at its upper angles and one at its lower. Its external face is soft and irregular, and everywhere shows small perforations, which are openings of utricular follicles. The inner face is free from inequalities, and feels like mucous membrane. These sacs are usually extruded as they lie in utero, but sometimes they are inverted. In one instance I have known such a sac to become inverted and expelled into the vagina, but the cervical extremity holding its attachment at the os internum, the inverted bag hung like a polypus in the vagina. A similar case is recorded by Mme. Boivin.

Under the microscope the cast is found to consist of the lining membrane of the uterus, hypertrophied in all its elements almost exactly as it is in pregnancy. Indeed, as I shall soon show, the most skilful microscopist cannot distinguish one from the other. The vessels of the mucous membrane are increased in size, capacity, and number, a proliferation has taken place in its epithelial cells, and great development has occurred in the utricular glands, the mouths of which are visible even to the naked eye.

Etiology.—This part of our subject constitutes one of its most important and interesting points, but, unfortunately, that diversity of opinion which always characterizes unsettled questions is found to exist here. Our want of accurate information depends upon the fact that the true pathology of the condition is not known. Some, with Oldham and Tilt, regard it as a result of ovarian disease; others, with Raciborski, Lebert, Handfield Jones, and Simpson, look upon it as a pure desquamation or exfoliation of the uterine mucous membrane for which no cause can be assigned; while Klob and others are convinced that it is an exudation, the result of endometritis, thus returning to the position assumed by our forefathers. In further reference to etiology I shall give a *résumé* of the views which have been and are received, and mention some of the authorities who adhere to them.

1. It was formerly believed that a layer of plastic lymph was, as a result of endometritis, thrown out over the uterine wall, which, becoming organized, constituted the cast of the uterus. This belief was entertained by Montgomery, Dewees, Siebold, Frank, Naegelé, Desormeaux, and others.

2. It is now regarded as an exfoliation of the entire mucous membrane of the uterine body, due to congestion and irritation transmitted to the uterus. This view, conceived by Oldham, is adhered to by Semelaigne and others.

3. The pathological explanation just mentioned being adopted, the cause of the occurrence of the exfoliation is attributed, in the words of

Scanzoni,¹ to "a considerable hyperæmia of the walls of the uterus, which is followed by an excess in the development of the mucous membrane." This theory is adopted by Courty, Hegar, Eigenbrodt, and others. The last two authorities have proposed for it the name of "dysmenorrhœa apoplectica."²

4. Prof. Simpson³ attributed the exfoliation "to an exaggeration of a normal condition, or to an exalted degree of a physiological action." Mandl declares that Rokitsky, Robin, Mayer, and others adopt this view. He further attributes the same belief to Klob, Courty, and Braun, but in this I think that he is in error.

5. It is regarded as due to an inflammatory condition by Klob,⁴ who declares that "those pathologists were not far from the truth who described such cases as endometritis." This view is indorsed by Tilt,⁵ Braun,⁶ and others.

6. By some the membrane is regarded as due to a deciduous formation excited by conception which has just been established, or is ovular in its character. The first of these views is maintained by Hausman,⁷ and admitted in some cases by Rokitsky;⁸ and the second was advanced by Raciborski.

From my observation of this affection, I cannot attribute it to endometritis, for evidence of the existence of that disease was entirely wanting in four cases out of five. Even if endometritis exist with marked displacement, it must not be concluded that these conditions have necessarily produced exfoliation, for they are commonly present as results in cases in which dysmenorrhœa of membranous type has lasted long without evidence of their existence.

Frequency.—I cannot regard the disease as one of frequent occurrence, for in my experience I have met with it but five times. It is true that I have seen a number of cases which had been regarded as of this character, but most of them proved not to be so upon closer examination. Scanzoni reports twenty-one cases.

Differentiation.—The diseases with which this may be confounded are—

- Early abortions ;
- Blood casts, or fibrinous moulds of the uterus ;
- Exfoliation of the vaginal mucous membrane ;
- Diphtheritic endometritis.

¹ Op. cit., p. 348.

² For my citation of authorities on this subject, especially those of Germany, I rely upon a very valuable article by Dr. Mandl, of Vienna, translated in the N. Y. Obstet. Journ., vol. ii. p. 402. To this essay I am much indebted.

³ Clin. Lect. on Dis. of Women, Am. ed., p. 109.

⁴ Op. cit., p. 237.

⁵ Lancet, 1853.

⁶ Expression of opinion in Dr. Mandl's case. See his article, p. 413.

⁷ Mandl's article, p. 407.

⁸ Klob, op. cit., p. 237.

From the first of these the differentiation can be accomplished by the progress of the case, the repetition of the process, and the entire absence of the symptoms of pregnancy. The great difficulty which attends determination of the character of one specimen may be gathered from two quotations from Dr. Mandl's article, already often alluded to. They are from reports by Wedl and Rokitansky, who exposed *specimens from the same patient* to the microscope. Wedl's¹ report ends in these words: "This proves that the membranes belong to the decidua and chorion, and are parts of an ovum of the first weeks of pregnancy." Rokitansky's² report contains this passage: "The development of the mucous membrane is in excess of its usual menstrual degree. It is not, however, connected with conception."

Blood casts will readily be recognized by the microscope. No elements of uterine mucous membrane are discovered.

The microscope, too, will readily show the nature of false membranous casts of the uterine body, and of exfoliations of the vagina due to what Dr. Tyler Smith has styled epithelial vaginitis, or to contact with perchloride or persulphate of iron.

Symptoms.—With the commencement of the menstrual flow there are steady pains, which increase as this progresses until they become violent and expulsive like those of abortion. In a patient whom I have seen with Dr. Walser, of Staten Island, they are so excessive that she cannot find words to express her dread of their recurrence. Under these the os gradually dilates, and the membrane is forced out into the vagina. Then there is commonly a tendency to menorrhagia, which, however, soon disappears, and the patient has passed through the attack. For some time after it has passed off there are symptoms of endometritis, and purulent and sanguineo-purulent discharges. Sometimes, according to Huchard and Labadie-Lagrave, who have written an excellent article upon this subject in the *Archives Générales* for July, 1870, membranous dysmenorrhœa becomes complicated by diphtheritic endometritis, which is engrafted upon an attack of endometritis set up by the affection which we are considering.

Pain occurring with the commencement of menstruation ends only with the discharge of the exfoliated membrane. This membrane, as has been already mentioned, is pathognomonic of the kind of dysmenorrhœa which exists, and serves to differentiate it clearly from all other varieties. The appearance of the membrane is represented in Fig. 244.

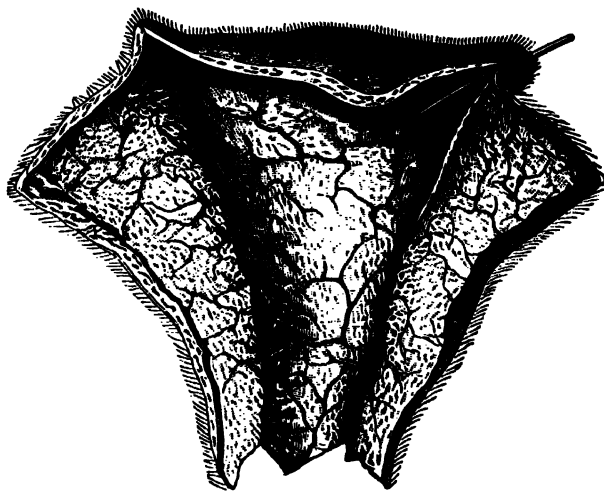
Prognosis.—The prognosis as to cure is extremely unfavorable, although cases, not only of complete cure, but instances in which in advanced stages of the disease conception has occurred, have been reported by Sie-

¹ Mandl, loc. cit., p. 415.

² Mandl, loc. cit., p. 416.

bold,¹ Tyler Smith, D'Outrepoint, and others. Two such cases have come under my own observation.

FIG. 244.



Dysmenorrhoeal membrane. (Coste.)

Treatment.—When the etiology and pathogenesis of a disease are unknown, it is astonishing to see how various, contradictory and energetic, treatment usually is. Deficiency of knowledge in these respects rarely results in an expectant plan of treatment. It commonly induces excessive vigor of interference. In the disease which we are now considering, the actual cautery has been freely applied to the cervix, while solid nitrate of silver and other caustics have been carried up to the fundus.

Uncertain as we are as to the pathology of the disorder, little can be said with any positiveness as to treatment. For relief of the violent pains which attend the attack, nothing compares in quickness, certainty, and efficiency, with the injection of morphia by the hypodermic syringe. If this use of the drug be not inadmissible on account of constitutional intolerance, it should be resorted to once in every eight or every twelve hours. Should there be any objection to its use, the pains of the attack should be quieted by inhalations of sulphuric ether carried only to the point of producing quiescence of the nervous system, not sleep or unconsciousness.

If uterine or ovarian disease be detected, it should be treated in accordance with general rules. If no such cause for the exfoliation be discovered applications of alterative character may be made to the uterine mucous membrane, as tincture of iodine, chromic or carbolic acid, solution of nitrate of silver, or solution of persulphate of iron. Dr. Fordyce Barker

¹ Mandl, loc. cit., p. 423.

reports very satisfactory results from passing into the cavity of the body an ointment containing from one to three grains of iodoform, to the amount introduced. Should displacement exist, it should be relieved, upon the principle that if we cannot cure a disorder, it is at least wise to relieve its most prominent complications and disagreeable symptoms. The meagreness of this advice as to the treatment of so distressing a malady is but too apparent, but there is no help for it, as it arises from an absolute want of knowledge as to more certain therapeutic resources.

Ovarian Dysmenorrhœa.

Definition.—In a number of cases, unfortunately by no means small, no depreciated condition of the nervous system will be found to account for habitual dysmenorrhœa; and the most careful exploration of the pelvis will fail to discover uterine or periuterine disorder. In such cases, if by conjoined manipulation the regions to the side of and behind the uterus be investigated, a globular, slightly compressed mass, about the size of a large walnut or small egg, will often be found in the cul-de-sac of Douglas, or on one or both sides of the uterus, low down, and in close proximity to it. If the patient be now placed in the left lateral position, and two fingers of the right hand be carried up the vagina, their palmar surfaces looking backwards, the presence of these smooth and movable bodies will be still better ascertained. They are the ovaries, enlarged, congested, tender, and prolapsed.

In some cases their disordered condition will be accompanied merely by dysmenorrhœa; but in others it will be marked by hysteria, amenorrhœa alternating with menorrhagia, and even by true epilepsy. Whether epilepsy is in such cases due to the existing ovarian disease, I am unprepared to state; but I have so often seen it accompany it that I freely confess my belief that it is sometimes caused by it. This is the condition commonly styled chronic ovaritis; which consists in congestion as its first stage, and hyperplasia of tissue with excessive nervous hyperæsthesia as its second. In several of these cases, where I have had an opportunity of examining the ovaries, I have found them filled with numerous small cysts.

Symptoms.—It would be difficult to make the diagnosis of this form of painful menstruation by rational signs alone. It should rest upon a union of rational and physical signs; but a suspicion as to the nature of the case would generally be formed from the former. The pain precedes the bloody flow by several days, and diminishes as it is established. It is of a dull character, extends down the thighs, is peculiarly likely to be accompanied by nervous manifestations, and to create depression of spirits. The breasts often sympathize, becoming painful and tender to the touch.

One very curious phenomenon which now and then marks these cases is the occurrence of intermenstrual, or "intermediate pain," as it has been styled by Dr. Priestley. At times this occurs with wonderful regularity

on a given day. In one case in my experience it occurred on the ninth day after menstruation had ceased; in another on the fourteenth; and in a third it commenced one week after the menstrual act, and continued for five or six days.

It must not be supposed that in every case in which the ovaries are discovered to be large, tender, and prolapsed, dysmenorrhœa will necessarily exist; nor that they will always be found in this condition where there are other reasons for suspecting ovarian dysmenorrhœa. The rule is as I have stated, but it is by no means without exceptions.

Pathology.—It is possible that the process of ovulation in a diseased ovary may excite, through its extensive and decided nervous connections, congestion and nervous hyperæsthesia in the uterus, which would create disordered menstruation of the congestive or neuralgic type. Ordinarily, however, the pain seems to be in the diseased ovaries themselves, and to depend upon the dehiscence of the follicles of De Graaf. This can be proven by touching these organs during the early periods of menstruation, and is made evident in cases in which ovulation occurs without menstruation, in cases of atresia or absence of the uterus.

Prognosis.—The prognosis of dysmenorrhœa due to this cause is very bad. In a young girl in whom ovarian disorder has advanced only to congestion, recovery may rapidly take place; but in a woman further advanced in life, and in whom chronic enlargement of the ovaries has occurred, and become associated with great tenderness and prolapse, the prospects of cure are very unpromising.

Treatment.—In such cases sterility is, I think, the rule. If uterogestation should be inaugurated, the nine months of inactivity and repose secured by it to the ovaries, is likely to be of great service. I have yet to meet with a case of chronic character in which I have effected a cure by purely medicinal means. By anodynes and nervines, of course pain may be annihilated, but this is far from effecting cure, and their use possesses the additional disadvantage of exposing the patient to the dangers of contracting a bad habit in reference to their future employment.

All means calculated to soothe local irritation, to give tone to the nervous system, and to combat sanguineous excitement, should be resorted to. Change of air and scene, a visit to the mineral springs and baths of Germany and France, and removal of all influences which severely or disagreeably tax either mind or body, will often accomplish great good. Warm sitz baths and warm and soothing vaginal injections should be employed, and complete rest in bed, or great quietude if the patient objects to bed, should be prescribed during menstrual periods and for three or four days after them. Internally I know of no means which are so efficacious as the free use of the bromides of potassium and ammonium, commenced a week before the menstrual act and continued until its close.

During menstruation, opiates, alcoholic stimulants, and anæsthetics

should, as far as possible, be avoided. Their use will probably give relief, and as a consequence they will be resorted to once a month thereafter. The danger of such a course is apparent. In place of them the tincture of cannabis Indica, hyoscyamus, and camphor, or five grain doses of the monobromate of camphor, may be employed. In some cases I have known a rectal suppository of five grains of iodoform give great relief.

I am unwilling to convey the idea that even these means are prolific of good results in such cases. They are by no means so, and are merely offered as the best with which I am acquainted. My own experience leads me to dread the application for relief of one of these obstinate and unsatisfactory cases.

Before leaving this subject I must put the reader upon his guard in reference to the following point. In treating of the subject of dysmenorrhœa I have accepted all the varieties which are generally indicated by authorities, because I believe that by their adoption a more thorough investigation of the subject is secured, and because experience leads me to think that a recollection of them at the bedside will aid the practitioner in classification and treatment. It must not, however, be supposed that every case of dysmenorrhœa will prove susceptible of strict limitation to one of these varieties. Such an anticipation will lead to disappointment and distrust of this classification. Many, indeed most, cases demonstrate the existence of more than one disturbing element. Thus, for example, retroversion occurring in a debilitated, weak, and nervous woman, whose blood is impoverished, might cause a dysmenorrhœa, due in part to mechanical obstruction, in part to neuralgia, in part to congestion, and perhaps even to a certain extent to a secondary endometritis. Too much must not be expected from any classification, and it must be borne in mind that one of the great ends in view, in adopting this style of arrangement, is the attainment of thoroughness of investigation and facility of remembrance.

In view of the fact which I have just mentioned, it is well for the practitioner to have at his disposal some general plan of treatment which may be resorted to in cases not readily susceptible of classification. The following is one which I think will be found effectual. As soon as menstruation begins, or some hours before if its approach can be recognized, the patient should go to bed and apply warmth, by bottles of warm water, warm bricks wrapped in dry flannel, or, as is better, by bags of India-rubber filled with warm water, to the feet, abdomen, and sacrum alternately. She should then take by the rectum an enema composed as follows :—

R.—Tr. assafœtidæ, ʒij.
Tr. belladonnæ, gtt. xx.
Tr. opii, gtt. x.
Aquæ tepidæ, ʒiijss.—M.

S.—Throw the whole into the rectum and retain.

If the patient have any decided objection to the use of an enema, the following prescription will be found very useful :—

R.—Chloral. hydrat. ℥ij.
Potassii bromidi, ℥ij.
Morphiæ sulphat. gr. iss.
Syrupi aurantii cort. ℥iij.—M.

S.—A dessertspoonful in a wineglassful of sweetened water every four hours while in pain.

The following suppository will sometimes prove useful in place of the enema :—

R.—Belladonnæ ext. gr. j.
Opii pulv. gr. iij.
Assafoetidæ gum. ℥ss.
Butyr. cacao, q. s.
M. et ft. supposit. No. vi.

S.—One by the bowel night and morning while suffering.

I must again reiterate that one great care of the physician in these cases should be to avoid creating in the patient a craving for opiates and stimulants. Barnes writes upon this so ably and justly, that I cannot refrain from referring the reader to his excellent work.

CHAPTER XLI.

MENORRHAGIA AND METRORRHAGIA.

Definition.—The first of these terms is employed for the designation of a profuse and excessive flow of blood at the menstrual periods; the second for any flow of blood, whether profuse or not, during the intervals. A patient who menstruates too profusely is said to suffer from menorrhagia, while one who loses blood not only at menstrual periods but in the intervals is said to suffer from metrorrhagia.

Frequency.—Both of these conditions are necessarily frequent, for they are both symptomatic of a large number of both functional and organic affections of the uterus. The uterus is the only organ in the body from which blood flows as a physiological process. Many organs and all the erectile tissues are subject to normal congestions, but from none except the uterus is a flow of blood ever other than a morbid process. It is not then astonishing that in this organ slight and numerous causes are apt to excite hemorrhage.

Pathology.—1st, any condition which induces a state of active or passive congestion of the uterine parenchyma or lining membrane; 2d, any influence creating a solution of continuity upon its mucous surface; 3d, any

growth which, having a vascular connection with the uterine vessels, allows of a percolation through its tissues and from its circumference; and 4th, any agency producing dyscrasia of the blood may result in these disorders. Any one of these conditions existing alone may produce the flow; several combined are still more certain to do so. It must, however, be admitted, that very violent hemorrhages will sometimes take place from the non-pregnant uterus without our being able to determine their cause, none of the conditions just mentioned being recognizable.

Causes.—The conditions which most frequently occasion menorrhagia and metrorrhagia are—

- General plethora;
- Areolar hyperplasia;
- Polypus;
- Fecal impaction;
- Granular degeneration;
- Fibrous tumors;
- Chronic ovaritis;
- Cancer or sarcoma;
- Retained products of conception;
- Fungous degeneration of uterine mucous membrane;
- Hematocele;
- Subinvolution;
- Any displacement of the uterus.

Congestion of the uterus is very common at the period of the menopause, or as a result of violent muscular efforts. It may likewise occur as a consequence of abortion, an impeded hepatic circulation, endometritis, areolar hyperplasia, displacements, chronic ovaritis, or fecal impaction.

Retention of some of the products of conception is very frequently a cause. The placenta may remain in part or in whole, the foetal shell may become a mole, or the chorion may undergo degeneration, and uterine hydatids, as they are erroneously called, collect within the uterus.

Simple hyperplasia of the lining membrane of the uterus, styled vegetation or fungous degeneration, is the most frequent source of both varieties of hemorrhage. The vegetations thus created were described by Récamier, who advised and practised scraping them off by means of a steel instrument. M. Aran, who has written an excellent article upon them in his work on the Diseases of the Uterus, thus describes them. "They present themselves in two entirely different forms. In the first and most common form they are tumors, ordinarily sessile, continuous with the mucous membrane by a base sometimes as large as themselves. They vary in size from that of a grain of wheat or a little pea to that of a large pea and even of a small strawberry or a large raspberry. The last are often pediculated." These are styled cellulo-vascular vegetations, and may exist in any part of the cavity of the uterus. Generally they do not

exceed two or three in number, and are found in the cavity of the body. "In the second form they are a species of pediculated vegetations resembling in appearance those follicular polypi which are so common in the neck of the uterus. They vary in size from that of a grain of wheat to that of a pea." These are called cellulo-fibrous vegetations. Both varieties generally result from chronic engorgement of the mucous lining of the uterus. As a consequence of subinvolution they are very frequently met with, and markedly complicate that condition.

Sometimes after an abortion, at other times after labor at full term, hemorrhage will steadily continue without any assignable cause. If the cervical canal be dilated, little fungoid growths will be found attached to a circumscribed portion of the uterine wall, which being removed by the curette, the flow will at once cease. This variety of fungoid growths follows so closely upon the parturient act, that it appears probable that they arise from minute portions of placenta, which, remaining attached, draw their nourishment from the uterine vessels. I have no positive evidence of the truth of this view, for, although I have often had these growths microscopically examined, I have not obtained it in this way. Klob¹ mentions a peculiar kind of flat vascular elevation which occurs upon the mucous membrane of the uterus which I have never seen. "These puffed elevations are red, shiny, velvety, and smooth; on scraping them with a knife a milky fluid exudes from them, which, under the microscope, exhibits nothing but the glandular epithelium of the uterus, sometimes transparent vesicles and colloid bodies of varying size." They are very vascular. Klob declares that in the case of a woman 36 years of age death occurred from metrorrhagia. He examined the uterus post mortem, and "was unable to find anything except such a vegetation of mucous membrane, about one inch thick and one and a half inches in diameter."

It is astonishing how profuse and constant a flow will sometimes result from very small and apparently insignificant vegetations. Some years ago I had an opportunity of examining post mortem a patient of Dr. Louis Elsberg, of this city, of whom this history was given. The patient had suffered for years from menorrhagia and occasionally from metrorrhagia. On many occasions Dr. Elsberg had resorted to the tampon, and on several had been forced to plug the cervix with considerable force to prevent death from the excessive flow. Upon inspection I found nothing to account for the condition but three fungous projections, which were situated just above the os internum. They resembled somewhat the warty growths sometimes seen upon the glans penis, except that their papillary character was not so marked. Unfortunately they were destroyed before they could be examined by the microscope. It may be suggested that some other cause might have existed, but none such was

¹ Op. cit., p. 139.

discovered upon careful investigation. The uterus, ovaries, and pelvic tissues appeared to be in a perfectly normal condition.

Chronic ovaritis often results in great menstrual irregularity, sometimes for months the menstrual discharge does not occur, and then without any apparent exciting cause a dangerously profuse hemorrhage occurs which requires the most energetic means to control it.

My experience furnishes me with a number of cases in which fecal impaction produced prolonged metrorrhagia, which was cured by its removal.

Differentiation.—This is at once the most important and most difficult of the physician's duties in reference to the symptoms which we are considering. If he be too easily persuaded to look upon the loss as one of the results of the "change of life," or even of primary idiopathic congestion, much time may be lost before his error is corrected. Should he forget that he is dealing with a symptom, and look upon the condition as a disease, he will often not merely lose time, but, in the end, entirely fail in giving relief; for the empirical practice of confining such patients to bed and relying upon astringents, cold applications, and narcotics, will commonly be found to be ineffectual. In every case, unless the cause be palpable, it is advisable to examine systematically the entire uterus and its surrounding tissues in the following manner:—

1st. The cervix should be investigated by touch, the speculum, and the uterine probe.

2d. The anterior and posterior walls, and the fundus and sides of the uterus, should be examined by conjoined manipulation, rectal touch, and palpation.

3d. The whole pelvis should be explored by conjoined manipulation, rectal touch, and palpation.

4th. The cervix should be dilated by tents, and the cavity of the body explored by the introduction of the index finger, by the uterine sound, and the curette.

In many instances a diagnosis can be made only by these means; but by their aid, if fully developed, very few cases will baffle research.

Tents offer us a most valuable means for diagnosis and treatment, but the practitioner must be very sure to open the os internum by them so that the finger may pass to the fundus. In many cases, when it is supposed that a full investigation of the uterine cavity has been made, the os internum has never been passed by the finger, which consequently explores only the cervical canal. It will not infrequently require three and even four tents to open the cavity of the body fully to the finger. But such an exploration, although very thorough and satisfactory, is not free from danger. It may, therefore, be very generally replaced by the passage of a loop of wire over the endometrium. If any small tumor exists, it will in this way be discovered, and, if uterine fungosities exist, the removal of one or more will very surely disclose the fact.

Prognosis.—This will depend upon the cause of the affection. Should this be clearly ascertainable and curable, it will, of course, differ very much from what it would be if the cause were obscure and difficult of removal.

Results.—Menorrhagia, and, more markedly still, metrorrhagia, if unchecked, may result in—

Sterility;
Hydræmia;
Hysteria;
Dyspepsia;
Extreme emaciation;
Death.

Treatment.—This is palliative and curative. The treatment of a profuse flow of blood from the uterus, as from any other part of the body, should always consist primarily in checking it. In a case of menorrhagia, the patient should be kept perfectly quiet upon her back; cloths wrung out of cold water should be laid over the uterus, vulva, and thighs; cold, acidulated drinks, as iced lemonade, solution of elixir of vitriol in ice-water, etc., should be given freely; and the ingestion of all warm fluids strictly interdicted. In addition, the apartment should be kept cool, the foot of the bedstead elevated about ten inches, the nervous system quieted by opium, or an appropriate substitute, and all conversation prohibited. Certain general hemostatics should always be tried; among the chief of which are gallic acid, ergot, and tincture of cannabis indica. The last is one of the best at our command.

In mild cases this treatment may suffice, but in severe ones it will not. In these the speculum should be introduced and the vagina filled with a tampon. This will rarely fail; but in certain cases, as, for instance, those of cancer of the neck, it will do so. Under these circumstances the tampon of cotton should be removed, and replaced by one consisting of the same material saturated with a strong solution of alum, or with the official solution of persulphate of iron diluted with four times its bulk of water. A stronger solution may cause sloughing of the vaginal mucous membrane. A solution of full strength has been known to produce gangrene of the vaginal walls themselves. Instead of using these solutions a small linen bag may be filled with powdered alum, placed in contact with the cervix, and held in place by a tampon; or two drachms of tannin may be left free against the part. To these means almost all cases will yield temporarily, but some will be met with which will not do so, and in which even more energetic ones are called for to prevent death from loss of blood. In these exceptional cases the cavity of the body of the uterus should be freely injected, after dilatation of the cervical canal, with the tincture of iodine, or a strong solution of alum.

Before a case of menorrhagia is subjected to this course of management,

this point must be carefully considered: some women naturally flow very freely at menstrual epochs, and are not injured by the loss. It is their peculiarity, and not an evidence of an abnormal state, and it should be decided whether or not treatment be required. In reference to metrorrhagia, it is equally important to bear in mind that some women, during the early months of pregnancy, have a steady flow of blood, and before a tent is employed, or probing the uterus is resorted to, this state should be carefully eliminated.

*Curative Treatment.*¹—One great reason for the fact that this often proves fruitless is that the existing disorder, and not the disease which produces it, is kept before the mind of the practitioner. It should be borne in mind that the excessive hemorrhage is a symptom, and that the morbid state which creates it must be sought for and eradicated. I am confident that the statement already made that one of four great pathological factors will usually be found to be the source of excessive or prolonged uterine hemorrhage, will stand the test of experience at the bedside. I therefore place before the reader at a glance the ordinary causes of uterine congestion, solution of continuity, growths from uterine mucous surface, and blood dyscrasia. That there are other conditions, such as pelvic peritonitis, hemocele, etc., which may cause uterine hemorrhage, I do not deny; but when a bloody flow marks the existence of such grave diseases, it is overshadowed by them and requires no special treatment. I here give those which ordinarily produce a flow which requires treatment from its prominence and importance, although I am almost repeating myself.

Congestion of uterine tissue may be due to

Areolar hyperplasia;
Subinvolution;
Fibroids;
General plethora;
Displacement;
Fecal impaction;
Chronic ovaritis;
Laceration of the cervix.

Solution of continuity may be created by

Ulceration;
Granular degeneration;
Cancer;
Sarcoma;
Laceration of the cervix.

Growths from uterine walls may consist in

Polypi;
Fungous growths;
Adhering products of conception;
Fibroids;
Sarcoma or cancer.

Blood dyscrasia may be due to

{ Scorbutus;
Chlorosis;
Spanæmia from uræmia or
other grave constitutional
disease.

If the source of the disorder be discovered, its treatment is often very simple and effectual, and as the management of most of the conditions here recorded is familiar to every reader upon general medicine, or is given in other parts of this work, little more need be said except upon one or two points.

In a case of subinvolution, the free use of ergot will be found a valuable adjuvant to the means already enumerated for palliative treatment, and it may prove serviceable as a curative agent. The same remark applies to the fluid extract of viscum album, which may be well employed alternately with, or instead of, ergot. In the treatment of all uterine congestions the occasional use of an active purgative, or the systematic and steady employment of the same class of medicines in small doses, will often prove highly beneficial.

Treatment of Fungous Degeneration of the Uterine Mucous Membrane.—

If this condition be clearly diagnosticated, not surmised, but fully determined upon by rational and physical signs; the first consisting in prolonged hemorrhage, without the existence of other disease; and the second in evidence afforded by the detachment or expulsion of some of these masses, the whole lining membrane of the uterine body should be thoroughly but gently scraped by the curette represented in Fig. 245.

FIG. 245.



G. TIEMANN & CO.

Thomas's wire curette.

Should the cervical canal be narrow, it may be necessary to dilate it by a sea-tangle tent; but, ordinarily, no previous dilatation is necessary for the use of this instrument, which should be passed with a slight degree of scraping action over the entire surface of the uterine body.

In recommending the curette as a most valuable resource in the treatment of menorrhagia due to fungous degeneration of the uterine lining membrane, I do so from very extensive and constantly increasing experience with it. I employ it frequently in private practice, and in the Woman's Hospital it is commonly used by most of my colleagues, as well as by myself. Not only has it proved in my hands a very efficient instrument, but one attended by little danger unless employed in cases previously affected by peritonitis or cellulitis. For one using it with such results it is difficult to comprehend how it should be so unfavorably regarded

by many able practitioners. The late M. Aran¹ was bitterly opposed to a resort to it; and Gallard² styles its use a "detestable operation." The latter author then goes on to speak of the "perfect" harmlessness of intra-uterine injections" in menorrhagia! Truly, experience does not teach to all men the same lessons, though all may sincerely strive to read its teachings aright.

In place of the curette the lining membrane of the uterine body may be modified by the application of pure nitric acid, after the plan of Kidd and Athill, of Dublin, or by the injection of the uterine cavity by pure tincture of iodine, solution of nitrate of silver, or solution of persulphate of iron diluted with two or three equivalents of water. As a full discussion as to the dangers of intrauterine injections will be found elsewhere, I shall not enter upon the subject here.

Should caustic treatment by strong acid be determined upon, the cervical speculum should be passed through the neck to protect this part, and preserve the acid for energetic action on the lining membrane of the body.

In many cases replacement and support of a displaced uterus will serve to relieve a prolonged metrorrhagia, while the same results will be produced in others by cure of a granular and bleeding cervix, or the repair of a lacerated one.

All disorder of the blood should be combated by appropriate constitutional means, even where it is secondary to the loss, and not a primary cause of it. Where the hemorrhage is due to a polypus, the resulting impoverishment of the blood renders escape of the vital fluid more easy and rapid.

In very obstinate cases a change from a warm to a cold climate, and from the lowlands to a mountainous region, often accomplishes a great deal of good.

I feel very sure that in menorrhagia a great deal of harm results from the frequent use of iron and quinine. These drugs are given to repair the damage done to the blood, but both of them increase uterine congestion, and tend to aggravate the flow.

CHAPTER XLII.

AMENORRHŒA.

Definition.—Amenorrhœa, a term derived from *a*, privative, *μην* "a month," and *ρῆω*, "I flow," implies an absence of the menstrual flow in a woman in whom it should naturally exist. Such an absence before puberty, after the menopause, or during pregnancy and lactation, is the normal condition, and hence does not come within the definition.

¹ Op. cit., p. 473.

² Op. cit., p. 242.

³ Op. cit., p. 254.

Frequency.—It is an affection of great frequency among women who live luxurious and indolent lives, and disorder the nervous and sanguineous systems by neglect of those habits which keep them in a state of health. Hence it is very frequently encountered among the members of the higher classes of civilized society all over the world.

Varieties.—If the habitual monthly discharge be suddenly checked, the disorder is styled *suppressio-mensium*; and if the discharge have never appeared in a woman who ought to menstruate regularly, it is called *emansio-mensium*.

Pathology.—That the discharge of blood, which, occurring at monthly periods, constitutes menstruation, is a true hemorrhage dependent upon the process of ovulation, is now regarded as a settled fact by most physiologists. In accordance with a law of nature which we recognize in its effects but cannot explain, once in every twenty-eight days one or more ovules in each ovary burst their envelopes, and entering the Fallopian tubes pass downwards to the uterus. This eruption of ovules produces in the ovaries congestion and nervous exaltation, which continue until the process is completed.

No sooner are these organs thus affected than, through the instrumentality of the ganglionic system of nerves connecting them with the uterus, that organ sympathetically undergoes congestion likewise. The whole uterus becomes heavy and descends perceptibly in the pelvis; its mucous membrane is swollen and turgid, and the vessels which supply it dilate under an excessive hyperæmia, as do those of the conjunctiva in conjunctivitis; then a rupture occurs and relief is obtained by hemorrhage. For the proper performance of the function three elements must exist in a perfect state of integrity: 1st, the uterus, ovaries, and vagina must be perfect in form and vigor; 2d, the blood must be in its normal state; and 3d, the nervous system governing the relations between the uterus and ovaries must be unimpaired in tone.

Any influence disordering one or more of these may check ovulation, the great moving cause of the function; prevent the degree of sympathetic congestion necessary for rupture of uterine vessels; or oppose the discharge of blood which has been effused.

The non-performance of the function of menstruation was formerly, and even now is by some, regarded as productive of many constitutional evils, as, for example, chlorosis, phthisis, dropsical effusions, etc. It is highly probable that in these deductions the effect has been mistaken for the cause. The impoverished blood, and nervous derangement attendant upon these affections, result in failure of that function. No proof exists which can substantiate the view that amenorrhœa ever induces permanent lesion of any organ in the body.

Causes.—After what has been already stated, the causes of the affection may be tabulated without fear of confusing the reader.

Amenorrhœa may result from any of the following conditions:—

Abnormal states of organs of generation.

- Absence of uterus or ovaries ;
- Rudimentary uterus or ovaries ;
- Occlusion of uterus or vagina ;
- Uterine atrophy ;
- Pelvic peritonitis ;
- Atrophy of both ovaries ;
- Cystic degeneration of both ovaries.

Abnormal states of the blood.

- Chlorosis ;
- Plethora ;
- Blood state of phthisis ;
- “ “ of cirrhosis ;
- “ “ of Bright’s disease, etc.

Abnormal state of ganglionic nervous system.

- Atony from mental depression ;
- “ “ indolence and luxury ;
- “ “ want of fresh air and exercise ;
- “ “ constitutional diseases, as phthisis, etc.

Complete absence of the internal organs of generation is very infrequent, though a rudimentary condition is less rare. With reference to absence of the uterus, Scanzoni remarks: “On carefully analyzing the reported cases of entire absence of the womb, we find that almost always some rudiments of this organ still exist, so that authenticated and unquestionable instances of this anomaly are extremely rare.” He further declares that he has never been able to authenticate a single case. I have seen one instance presented by Prof. I. E. Taylor to the Obstetrical Society of this city, in which no trace of the uterus could be detected upon the closest scrutiny of the parts removed post mortem.

Absence of both ovaries is quite rare. They are most frequently found to be in a rudimentary condition resembling their fœtal state.

The vagina may be occluded by an obturator hymen, contraction from inflammation and sloughing, or from congenital or acquired atresia.

So likewise may the canal of the cervix uteri be congenitally or accidentally closed.

What I have styled atony of the nervous system has been well described by Prof. Hodge, of Philadelphia, under the name of sedation. It consists in a decrease of the excitability, vigor, and activity of the nervous agency which controls the functions of different organs, and has for its cause physical and moral influences, some of which have been enumerated. Some of the functions which are under the control of the ganglionic system are, the action of the heart, digestion, peristalsis, and regulation of animal heat. In one leading a natural and healthy life, in the country for ex-

ample, all these are likely to be normally performed; but if the same individual remove to a crowded city, lead the life of a student, exhaust his nerve power by late hours, bad air, and mental efforts, all of them rapidly become deranged. He suffers from palpitation of the heart, dyspepsia, coldness of hands and feet, and constipation. This change usually occurs slowly, but sometimes it does so rapidly, as from a sea-voyage or any very violent mental strain. In a similar manner the processes of ovulation and menstruation are affected by it, in some cases gradually, in others with great rapidity.

Differentiation.—Before treatment is instituted for this condition, it must be carefully differentiated from—

- Pregnancy ;
- The menopause ;
- Tardy menstruation.

The first will be readily recognized by its characteristic signs, if suspicion be awakened, and they be investigated. Very often no such suspicion arising, the criminal desires of some women are gratified, and the hopes of others blighted through the unintentional induction of abortion by the treatment adopted.

The law with regard to the menopause is, that it should occur between the ages of forty and fifty, but it is sometimes delayed until sixty or seventy, and at others take place at a very early age. It may occur as early as the twenty-first year, and in twenty-seven out of forty-nine cases of early cessation collected by Dr. Tilt,¹ it took place from the twenty-seventh to the thirty-ninth year. The absence of sensations of discomfort at the periods when the menses should occur, will help to lead the practitioner to a correct conclusion as to the character of the case.

Sometimes mothers will be much alarmed by absence of the function in girls at fifteen or sixteen years. It should be remembered that it is not very rare for it to be delayed until those ages. Differentiation should be accomplished under these circumstances as under the last mentioned.

Treatment.—From what has been already said, it is manifest that amenorrhœa is not a disease, but a symptom of some local or general disorder, and it follows that all efforts directed simply to re-establishment of the absent function, must necessarily be empirical. The cause should be discovered, and, if possible, removed. Should it be susceptible of removal, the method appropriate for accomplishing this will be evident, while if it depend upon an incurable condition, great benefit will be gained by the avoidance of means previously practised in the vain hope of establishing the flow, and by our ability to place the mind of the patient beyond the harassing influence of suspense.

If the uterus be found to be absent, all that can be done will be to ab-

¹ On Uterine and Ovarian Inflammation, p. 54.

abstract a sufficient amount of blood from the arm by venesection, if necessary, to relieve the urgent symptoms attending each epoch.

Occlusion of the vagina or cervix should be treated by surgical means, the barrier being overcome by the knife, scissors, or trocar.

In case a rudimentary or atrophied uterus be discovered as the source of the affection, attempts should be made to develop it by local stimulation and distention. At short intervals it should be fully distended by a tent, in order that an increase of nutrition and consequent increase of volume and capacity may be excited. When this plan is not in operation, an intrauterine galvanic pessary may be kept in utero for the furtherance of the same end. It is astonishing how much development may be obtained by a persevering practice of this plan. In many instances it will restore the uterus to its original size, and cause a return of the menstrual flow. But it often requires considerable time to bring about so favorable a result; even years may elapse before it is fully attained.

If it be decided that the non-performance of the function is due to plethora, anæmia, or chlorosis, these states should be treated; the first by venesection, strict diet, exercise, and a life in the open air; the second and third by change of air, rich food, exercise, and ferruginous tonics. In plethora, Prof. Bedford speaks highly of the abstraction of blood from the arm at intervals of a month, the abstraction being performed between the menstrual epochs.

Should some grave constitutional condition like tuberculosis or the others mentioned, be found to be the main morbid state, it, and not its resulting symptom, should attract attention.

An atonic state of the nervous system governing menstruation should be treated by a resort to a general tonic course. Among the means applicable to its removal may be especially mentioned, exercise on foot and horseback, rowing, calisthenics, sea-bathing, nutritious food, and nervous tonics of medical character, as nux vomica, strychnine, quinine, and the general use of electricity. It is in this class of cases that many drugs and prescriptions styled emmenagogue have often succeeded in restoring the function even when used empirically. A state of general nervous atony is frequently attended by chlorosis and always by constipation. The nervous disorder and two of its resulting symptoms may be favorably affected by the stereotyped combination of aloes, iron, and myrrh or nux vomica; and the sluggish nerve power may be temporarily excited to the performance of its duties by the administration of tansy, rue, ergot, or savine. But it is not through desultory means of this character that a cure can be anticipated with any confidence. A more comprehensive plan directed to the improvement of the patient's constitution should be adopted and systematically pursued. As general means those already mentioned will always be found highly useful. If the patient while at home cannot be prevailed upon to practise sufficient self-denial to avoid what is injurious,

or be made to develop the energy necessary to follow a course which requires effort, she may, with great advantage, be placed for a time in a well-regulated hydropathic establishment, where the early hours of retiring, simple food, exercise, society, pure air, and bathing, will accomplish a roborant effect which will prove of great value in the cure of the affection.

But not merely should constitutional means be adopted. After the general condition has been improved, local stimuli may be resorted to with great benefit. Those which will be found to be most efficient are—

Passage of the sound ;

Tents ;

Cupping ;

Electricity ;

Stimulating enemata ;

Baths.

In their action these means probably exert an influence not only on the uterus, but sometimes by their stimulating effects excite the process of ovulation. The sound should be passed up to the fundus once every day for three or four days before the expected flow ; or if the process of ovulation do not demonstrate its existence, it may be passed once a week throughout the month. At the same periods tents of tupelo or sea-tangle may be used, the dangers attending them being always borne in mind during their employment.

The cervix uteri may, by the application of an exhaustor or dry cup, have a marked hyperæmia excited within it, which extends to the uterine body and replaces that which should have occurred from physiological causes. A very simple method for producing it is to enclose the cervix within the mouth of the cylinder of hard rubber represented in Fig. 246, and then exhaust the air by withdrawing the piston.

FIG. 246.



Syringe for dry cupping the cervix.

Before the introduction of this instrument the uterus should be exposed by means of the speculum. In this way I have repeatedly drawn, without effort, one or two drachms of blood through the mucous lining of the neck.

Electricity is a means of great value. One pole of a battery may be applied over the lower portion of the spine and the other passed over the hypogastrium, placed in contact with the cervix, or even carried, by means of a wire covered, except for its terminal three inches, with a gum-elastic catheter, up to the fundus of the uterus. For the purpose of keeping up a mild but steady current within the uterus, Prof. Simpson has

advised a stem composed of copper for one half its length and zinc for the other half, which is passed up to the fundus. It has an ovoid disk at its lower extremity upon which the cervix rests. Dr. Noeggerath has made an improvement in this by having the stem composed of two parallel pieces of copper and zinc, instead of two short pieces of these metals united at the centre of the stem. As these instruments must be left in place while the patient walks about, there is always danger of their irritating the walls of the uterus to too great an extent. To avoid this I have employed a stem composed of alternate beads of copper and zinc, held together by a small wire rope, which passes through the centre of each, and is secured to the uppermost and to the vaginal disk below. This may, by any movement of the uterus, be bent at the required angle, and consequently can do no injury. (Fig. 247.) The disk or bulb of this instrument should be made globular so as to rest in the cup held between the branches of a Hodge or Smith pessary, as shown in Fig. 197.

FIG. 247.



Galvanic pessary.

As an excitant of the menstrual flow, enemata of very warm water impregnated with chloride of sodium, aloes, or soap, constitute a valuable resource. Not only does the medicinal substance irritate the uterine nerves, the warm fluid brought into close contact with the uterus also excites a flow of blood to it. Hip-baths and pediluvia have long been resorted to for the purpose of exciting menstruation. They should be prolonged, and as warm as the patient can bear them. In addition to these means, copious injections of warm water may with benefit be thrown into the vagina, one or two gallons being, by means of a proper syringe, projected against the os uteri.

Reasoning from analogy and from our knowledge of the physiology of menstruation, we are unquestionably warranted in the deduction that in a certain number of cases amenorrhœa is due to non-performance of the function of ovulation. It is not possible to give clinical evidence of the fact, but it may be strongly surmised when none of the symptoms usually attendant upon this process present themselves at monthly periods. The means by which it should be treated are those already advised, for any of the causes mentioned may produce that variety of the affection which is due to non-performance of ovarian functions, in the same manner that they give rise to that form depending upon the incapacity of the uterus.

In many cases where, in spite of well directed efforts, eight, ten, and twelve months will elapse without signs of menstruation, and this on repeated occasions, it is useless to continue efforts such as those which have been mentioned. The case is often better left to nature.

CHAPTER XLIII.

LEUCORRHŒA.

In my anxiety to impress the importance of regarding and treating this condition as a symptom of uterine or vaginal disease, and not as a primary affection, I have been in great doubt as to the propriety of devoting a separate chapter to it. In doing so I confess that I yield to a conventional practice which I do not fully indorse, and I offer this fact as an explanation of any superficiality in the treatment of the subject which may strike the reader. I feel very sure that the writer of fifty years hence will omit the separate consideration of this symptom entirely.

Definition.—This affection, the name of which is derived from λευκος, "white," and ρεω, "I flow," consists in a whitish, yellowish, or greenish mucous discharge from the vagina.

Synonyms.—It has been, in modern times, described under the names of fluor albus, blennorrhœa, pertes blanches, fleurs blanches, and whites. In ancient literature the variety of names which was applied to it may be judged of when it is stated that over fifty appellations were at different times employed in designating it.

Frequency.—No disease or symptom in the whole list of female ills is so common. Probably no woman ever goes through life without at some period, and for a variable time, suffering from it. It is only when it becomes annoying by its constancy, abundance, or irritating properties that it attracts attention and causes the patient to seek assistance.

History.—In the earliest writings of the Greek school and throughout Roman and Arabian medical literature, abundant descriptions of this disorder may be found. Hippocrates described it, pointing out as among its symptoms, puffiness of the face, paleness, and enlargement of the abdomen. He evinces a familiarity with its treatment by an admission of the difficulty of curing it. Aretæus of Cappadocia, in the first century, mentioned the varieties of leucorrhœa, as to color, quantity, etc., and Aetius and Paul of Ægina speak of two forms of the affection, red and white flux. For the latter, Aetius recommends gestation, vociferation, walking, etc. The Arabians, Haly Abbas and Alsaharavius, wrote upon the subject, but advanced nothing new.

As in ancient times, so also in modern, it has attracted a great deal of attention, and until the establishment of the present school of gynecology by Récamier, was treated of as a disease rather than as a symptom. Even

long after this period it was commonly regarded as a disease; the result of constitutional debility, or the index of an impure blood state. For the views which are now entertained concerning it, we are indebted to no one so much as to Dr. J. H. Bennet, of London, who, by his forcible reasoning, supported by clinical evidence, clearly demonstrated its ordinary dependence as a symptom upon some local lesion. Dr. Tyler Smith, in an elaborate essay upon the subject, has also done much to elucidate certain points in its pathology, which before his time had been undeveloped.

Pathology.—As a discharge of mucus or muco-pus is a symptom of urethritis, bronchitis, nasal catarrh, and faucitis, so is it a symptom of inflammation of the vagina and lining membrane of the uterus and Fallopian tubes. Whatever influence is capable of creating it elsewhere may give rise to it here, and in this position it is, as it is elsewhere, only an isolated sign of a pathological state. It is not by any means, however, always an evidence of inflammatory action. As many individuals upon exposure to cold will freely discharge mucus from the nostrils without any inflammation existing, so will many women suffer from leucorrhœa from any cause producing a temporary congestion of the mucous membrane. But in these cases the disease is temporary, following or preceding the menstrual congestion, or arising from fatigue or exhaustion. When it becomes permanent and the discharge grows profuse or acrid, its connection with a morbid state is rendered probable. At such times it is always a symptom of some abnormal condition of the uterus, Fallopian tubes, or vagina, and its presence should lead to an investigation of these organs,

Any agency which moderately increases vascular activity in a secreting organ tends to augment the amount of its secretion. I say moderately increases, because an excessive turgescence, such as attends upon acute inflammation, checks secretion entirely. Such an influence being exerted upon any part of the mucous covering of the generative canal of the female, an excessive flow of plasma, together with a rapid exfoliation of epithelial cells and the formation of pus-corpuscles, results.

Varieties.—Leucorrhœa is divided into two varieties, according to its origin—vaginal and uterine. Either of these may exist separately, or the two may coexist. If it be vaginal, it may continue as such for a length of time. If the inflammatory action producing the discharge be confined to the uterine mucous membrane, it may remain so without implicating the vagina, but that canal receiving the products of uterine secretion is generally excited into morbid action. A similar result may frequently be observed in nasal catarrh in children, the upper lip being bereft of its epithelial investment, and a papular or vesicular eruption excited over the neighboring parts of the face.

Vaginal leucorrhœa consists of a white, creamy, purulent looking fluid,

which is composed, according to Dr. Tyler Smith, of the following elements :—

- Acid plasma ;
- Scaly epithelium ;
- Pus corpuscles ;
- Blood globules ;
- Fatty matter.

Under the microscope it appears as represented in Fig. 248.

FIG. 248.



Vaginal leucorrhœa under the microscope. (Smith.)

That arising from the canal of the cervix is thick, tenacious, and ropy, like the white of an egg, and consists of—

- Alkaline plasma ;
- Mucous corpuscles ;
- Altered cylindrical epithelium ;
- Pus corpuscles ;
- Blood globules ;
- Fatty particles.

Examined by the microscope it presents the appearance shown in Fig. 249.

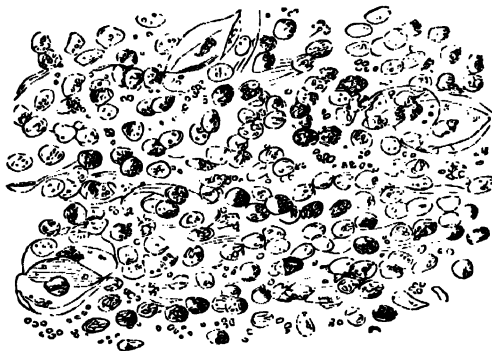
That arising from the body of the uterus resembles the cervical form, except that it is less gelatinous, less ropy, and more likely to be tinged with blood.

Causes.—Any pathological state which keeps up in the uterus a condition of engorgement ending in inflammation, or simply in retarded and enfeebled circulation, may create leucorrhœa as a symptom. Prominent among these may be mentioned—

- Subinvolution of uterus ;
- Suppressed menstruation ;
- Fibroids, polypi, or fungous vegetations ;

Prolonged lactation ;
 Gestation and parturition ;
 Excessive coition ;
 Anæmia ;
 Uterine displacement ;
 Laceration and eversion of cervix ;
 Endometritis, corporeal or cervical ;
 Granular degeneration ;
 Syphilitic ulceration ;
 Vaginitis, specific or simple ;
 Habitual constipation ;
 Toxæmia from malaria, uræmia, or gout.

FIG. 249.



Cervical leucorrhœa under the microscope. (Smith.)

It will thus be seen that the disorder may in some instances be a trivial matter, which, by a judicious combination of general and local means, will rapidly disappear, while in many others it is an attendant circumstance of some grave pathological state of the uterus or vagina, and consequently difficult of cure.

Prognosis.—This will depend in great degree upon the cause. If this can be readily removed, the prognosis will be favorable ; while if it be connected with some serious organic lesion, it will not be so.

Results.—Uterine leucorrhœa may result in—

Sterility ;
 Vaginitis ;
 Pruritus vulvæ ;
 Vulvitis ;
 Salpingitis ;
 Granular degeneration.

Treatment.—When a patient applies to a practitioner for the cure of leucorrhœa, it should be his first endeavor to discover the cause of the muco-purulent flow. A suspicion as to the source of the difficulty may

ordinarily be based upon examination into the rational signs, but a diagnosis of the condition which gives rise to the symptom which has excited anxiety in the mind of the patient can be more certainly arrived at by physical exploration. If upon this, disease of the uterus, vagina, or Fallopian tubes be discovered to exist, either in the form of inflammation or congestion, this affection should receive appropriate treatment. To recapitulate the plans which should be pursued would here be entirely out of place, for they are laid down in other parts of this work in connection with the special disorders of these parts. Suffice it here to say that the condition underlying the symptom leucorrhœa should receive treatment always. Sometimes the application of the curette, the operation of trachelotomy or of trachelorrhaphy, the replacement of a displaced uterus, or the removal of a submucous tumor will cut short a treatment which might otherwise be prolonged for years.

As to general treatment, a course especially adapted to giving tone to the dilated bloodvessels of the mucous membrane, and overcoming the tendency to excessive creation of cells and exudation of blood plasma, should in addition be adopted. To begin with, the patient should be put upon general tonic treatment, such as the use of quinine, Peruvian bark, strychnine, and iron; sea-bathing; change of air and scene; and the substitution of quiet and cheerful social influences for those which are exciting or depressing. The diet should also be made nutritious and simple, and all stimulants, spices, and condiments be strictly avoided.

When the vagina is affected, that canal, after having been carefully cleansed, should, by means of a rod wrapped with cotton, be thoroughly washed over with a solution of the nitrate of silver, one part to eight or ten of water. After this a tampon of cotton saturated with glycerine should be left in the canal for twenty-four hours and removed by the patient, a thread being attached to it for this purpose. Then copious astringent and soothing vaginal injections should be employed night and morning. The best astringents for this purpose are alum, tannin, infusion of oak bark, zinc, and lead. As examples of good combinations, I give the following:—

R.—Acidi tannici, ℥iv.

Glycerinæ, ℥xvj.—M.

S.—A tablespoonful to a quart of tepid water, to be used as a vaginal injection for five minutes every night and morning by means of one of the syringes recommended.

R.—Cupri sulphat. ℥jss.

Zinci sulphat. ℥jss.

Aluminis sulphat. ℥jss.

Glycerinæ, ℥vj.—M.

Follow same directions as those given above.

One drachm of boracic acid to a pint of warm water, half a drachm of hydrate of chloral or half an ounce of the fluid extract of *pinus Canadensis* to the same also answer an excellent purpose.

Once a week the application of the solution of nitrate of silver, in diminishing strength, should be repeated and followed by the use of the tampon of cotton soaked in glycerine, or glycerine and tannin, until the leucorrhœa is cured. Cure will commonly be effected by these means, if no other disorder exist to reproduce a symptom which it has once proved itself efficient to establish. If such a condition exist and be overlooked by the practitioner, it will inevitably cause again what it did before. Neither plan should be despised—treatment of the causative disorder nor that of the resulting symptom; and by a combination of the two plans better results will be obtained than could be accomplished by an exclusive adherence to either.

In cases of chronic vaginitis, astringents sometimes appear to do harm, and infusions of flaxseed, slippery elm, and similar substances often prove beneficial. On the other hand, in the treatment of chronic endometritis, it will often be found of benefit to use astringent injections which act not only by securing cleanliness, but by hardening the vaginal mucous membrane and preventing the complication of vaginitis as a result of uterine catarrh.

As a general outline, the following may be given as a plan of treatment:—

1st. Keep the uterus in perfect position by a pessary if it be decidedly displaced;

2d. By appropriate cathartics, keep the portal circulation free and the rectum emptied of feces;

3d. Cure laceration of the cervix if it exist, and remove polypi and fungosities;

4th. Remove all weight from the uterus from above, and all traction from it from below;

5th. Keep the cutaneous circulation active by baths, friction, exercise, and pure air;

6th. Keep the blood and nerve states normal by tonics, exercise, etc.;

7th. Counteract all toxæmic influences, such as malarial, (whether pallidal or from sewer emanations), uræmic, scorbutic, rheumatic, or arthritic;

8th. Keep the menstrual function normal by careful supervision;

9th. In case cardiac disease, aneurism, hepatic disease, pelvic peritonitis, or perimetric cellulitis are primary causes of it, recognize the futility of local treatment, and do not annoy the patient by a resort to it.

To enter more minutely into the treatment of leucorrhœa would be to defeat the main object which I have had in view, that of subordinating the consideration of this disorder to that of the diseased states which produce it.

CHAPTER XLIV.

STERILITY.

Definition and Synonyms.—This term, which is derived from *στερεος*, “barren,” and implies an incapacity for conception, is synonymously entitled barrenness and infecundity.

History.—Throughout medical literature, from the earliest periods to the present, it has attracted special attention, and been the subject of dissertations by all authors who have touched upon the affections peculiar to females. The frequent reference made to it by Biblical writers as a reproach to women, is too well known to require special mention.

Causes.—To comprehend the pathology of sterility, the physiology of conception must be clearly understood. In the act of coition the male organ, being introduced into the vagina, projects into and against the cervix a fluid, consisting of a thick, watery portion, holding in suspension large numbers of ciliated cells which have the power of moving by ciliary action. The bulk of this fluid pours down into the vagina, but many of the cells which it contains pass upwards into the body of the uterus, and through the Fallopian tubes as far as the ovaries. Should they come in contact with an ovule, impregnation may take place in the ovaries, Fallopian tubes, or uterus. When the impregnated ovule attaches itself to the uterus, the mucous membrane of this organ undergoes exuberant development, and throws around it an envelope called the decidua reflexa. Further than this, the process does not concern us, for conception has then followed impregnation, fixation of the impregnated ovum having occurred.

These facts being kept in mind, it becomes evident that a variety of influences may interfere with the performance of this delicate and subtle process. For its accomplishment four things are necessary as far as the woman is concerned.

- 1st. The possibility of the entrance of seminal fluid into the uterus ;
- 2d. The possibility of the production of a healthy ovule ;
- 3d. The possibility of the entrance of an ovule into the uterus ;
- 4th. The absence of influences in utero destructive to the vitality of the semen, and preventive of fixation of the ovum upon the uterine wall.

Should these four conditions exist, no woman will be sterile. She may not bear children, but the incapacity may attach to the male and not to her ; or, having conceived, she may have suffered from consecutive abortions, which have been mistaken for attacks of menorrhagia.

The special causes of sterility, or those interfering with these conditions, may be thus presented :—

1st. *Causes preventing entrance of semen into the uterus.*

Absence of the uterus or vagina ;
 Obturator hymen ;
 Vaginismus ;
 Atresia vaginæ ;
 Occlusion of cervical canal ;
 Conical shape of cervix ;
 Cervical endometritis ;
 Polypi or fibroids ;
 Displacements ;
 Very small os internum or externum.

2d. *Causes preventing the production of a healthy ovule.*

Chronic ovaritis ;
 Cystic disease of both ovaries ;
 Cellulitis or peritonitis ;
 Absence of ovaries.

3d. *Causes preventing passage of ovule into uterus.*

Stricture or obliteration of Fallopian tubes ;
 Absence of Fallopian tubes ;
 Detachments and displacements of Fallopian tubes.

4th. *Causes destroying vitality of semen or preventing fixation of impregnated ovum.*

Corporeal or cervical endometritis ;
 Membranous dysmenorrhœa ;
 Menorrhagia or metrorrhagia ;
 Abnormal growths ;
 Areolar hyperplasia.

The mode of action of most of these causes is so self-evident as to make anything more than their mention unnecessary. Some of them, however, require special explanation.

Vaginismus is an appellation which has been given of late years to a hyperæsthetic state of the ostium vaginæ, which results in spasm of its sphincter. This interferes with the entrance of the male organ, and consequently of seminal fluid into the vaginal canal ; indeed, in aggravated cases, it entirely precludes sexual approaches. The affection is by no means rare, and is a fruitful source of sterility.

An abnormal shape of the cervix has been pointed out by Dr. Sims as a frequent cause of infecundity. If this part be too long, so as to curl or bend upon itself, it is evident that it may not admit seminal fluid through its canal. But even a slighter degree of elongation, in which the cervix has a conical shape, has been observed to be frequently followed by that

condition. Fig. 250 represents the variety of conoidal cervix generally met with as productive of sterility.

Endometritis, whether it be cervical or corporeal, fills the uterine canal with a thick, tenacious mucus, which often prevents the entrance of seminal fluid or destroys its vitality.

Flexions of the uterus, by producing bending of the cervical canal, and versions, by pressing the os against one wall of the vagina, so as to close it as if by a valve, may entirely obstruct the passage to the uterus.

FIG. 250.



Conoidal cervix. (Sims.)

Obliteration and displacement of the tubes frequently result from pelvic peritonitis, and thus that affection often entails sterility of the most irremediable character. The second stage of the disease consists in effusion of lymph, which in time undergoes contraction, and either closes these canals or draws them out of place.

Membranous dysmenorrhœa, or rather the tendency to exfoliation of uterine mucous membrane which characterizes it, so alters the

uterine surface as to render it inapt for the fixation of the ovum.

Menorrhagia and metrorrhagia may result in the washing away of the ovum after impregnation and before fixation. The normal menstrual hemorrhage occurs before the entrance of the ovule into the uterus. If it be excessive and prolonged, it may remove the ovule entirely, and in the same way metrorrhagia may remove the impregnated ovum. An abortion does not occur under these circumstances, for although impregnation may have taken place, conception has not done so.

Abnormal growths of any form which fill the uterine cavity, as, for example, fibroids, polypi, hydatids, or moles, may so interfere with the attachment of the ovum to the uterus, as to prevent conception even when impregnation has occurred.

Although it is impossible to give positive proof of the fact that serious chronic disease of the ovaries results in a blighting influence upon the ovule, such a conclusion is rendered highly probable by the results of experience in such cases. Such a result is often found to attend chronic ovaritis, general pelvic peritonitis or cellulitis, and double cystic disease.

Some of the causes here enumerated are much more frequent than others. I would enumerate the most common causes in the order of their frequency in the following sequence. First, glandular cervical endometritis; second, areolar hyperplasia, the result of subinvolution of the uterus; third, conoid cervix, with contracted os; fourth, flexion and version of the uterus; fifth, contraction of os externum; sixth, fibroids, interstitial, or submucous; seventh, menorrhagia or metrorrhagia; and eighth, ovarian incapacity from chronic ovaritis or pelvic peritonitis. I do not

state this sequence dogmatically, but merely to convey an idea of my impressions with reference to the matter.

Differentiation.—Before it is determined that a woman is sterile, the sexual capacity of the husband should be ascertained. Men are averse to the confession of impotence, and will often allow the supposition of sterility on the part of their wives to be maintained rather than admit the truth. In two cases I have used an anæsthetic, ruptured the hymen, and distended the vagina, under the impression that sterility of several years' standing was due to the impossibility of the accomplishment of intercourse, and have subsequently discovered that the husbands of my patients were entirely impotent, and had been so before marriage.

Prognosis.—In reference to a disorder which may be produced by such a variety of causes, no positive prognosis can be given, for its cure will entirely depend upon the removal of the agency which produces it. Much, too, will depend upon the thorough investigation of the causes by the physician, and a proper understanding, on his part, of the treatment. Unquestionably a large proportion of sterile women may, by appropriate treatment, be made fruitful.

Results.—No physical results are produced by sterility, but its existence will frequently depress the spirits and sadden a disposition which, under other circumstances, would have been cheerful and equable. The married woman has always regarded and will forever view this incapacity as a reproach to her womanhood, and no amount of argument can make her accept it with resignation.

Treatment.—The treatment of sterility consists in the removal of its cause. Many of these causes are not susceptible of remedy, while the means of treating others are so evident that special mention may be confined to a few. Obturator hymen, vaginismus, atresia vaginæ, and occlusion of the cervical canal should be treated by the surgical operations appropriate to each.

In case the vaginal cervix should, to only a limited extent, be too projecting or conical, the bilateral operation for its enlargement should be practised after the method elsewhere described. If a slight constriction of the cervical canal appear to be the cause of the condition, dilatation may be essayed in place of a surgical procedure. In an aggravated case, when the neck projects markedly and is decidedly conoidal in shape, both these means are insufficient; amputation then becomes necessary. After this has been recovered from, the bilateral operation for cervical hysterotomy is often necessary before cure is effected. In this connection the chapters upon dysmenorrhœa and amputation of the cervix should be referred to. Endometritis should be appropriately treated, and abnormal growths should be dealt with as if sterility did not exist.

If a displacement be discovered and replacement and retention be possible, they should be practised. But if in case of flexion this be impos-

sible, the uterine canal should be rendered as straight as is practicable, by the cervical incision recommended by Dr. Sims for dysmenorrhœa. Menorrhagia and metrorrhagia should be treated upon the plan recommended in the chapter upon those subjects, and the patient be advised to keep very quiet and to avoid warm and stimulating beverages during menstrual epochs.

A remark made in connection with the treatment of leucorrhœa may with propriety be repeated here, namely, that to enter more minutely into the study of special remedial measures would tend to divert the mind of the reader from a point which I regard as of paramount importance; that this affection is commonly only a symptom which should be reached through the malady which induces it.

As I have elsewhere stated, glandular endometritis and tortuosities of the uterine neck are among the most frequent of the causes of sterility. The first of these is a disorder which is often incurable, and the surgical operations practised for the latter very commonly fail of result. And so with regard to other conditions resulting in sterility. If at the end of a large experience every one would compare the number of his failures in treating sterility with that of his successes, his results would not be regarded as very satisfactory. Unfortunately, the unsuccessful cases soon sink beneath the mental horizon, while the successful ones stand out prominently, and thus many a practitioner, by his evidence, unintentionally misleads others and produces disappointment.

CHAPTER XLV.

AMPUTATION OF THE NECK OF THE UTERUS.

ALTHOUGH the recognition of the important rôle played by laceration of the cervix in uterine pathology will certainly circumscribe very much the field of this operation, there are nevertheless conditions which will still call for a resort to it as the most effective surgical resource. As a full description of the operation has not yet been elicited by previous chapters of this work, it will be well to consider it here before leaving the consideration of uterine and taking up that of ovarian diseases.

History.—Ambrose Paré¹ was the first surgeon who advised amputation of the cervix. He recommended it in malignant growths of the part, to which, he says, “we may apply the speculum matricis, in order to see more easily.” It is reported, upon insufficient authority, to have been performed as early as 1652, by Tulpius, of Amsterdam, and in 1766, by

¹ Œuvres d'Ambroise Paré, lib. xxiv. p. 1012.

La Peyronie. Daniel Turner,¹ of London, in 1736, reported an instance in which the neck of a prolapsed uterus was amputated by means of a razor in the hands of the patient herself, who was insane. The recovery of the woman was evidently regarded as a wonderful circumstance. In 1802, the operation was systematized by Osiander, who performed it twenty-three times, and after this it was resorted to by Dupuytren, Récamier, Hervez de Chegoin, and others. It was, however, in the hands of Lisfranc that it attracted special attention, and in consequence of his enthusiasm it was for a time regarded as a means which was destined to accomplish a vast deal of good. His reports of its results were most favorable, and he described its dangers as slight. But soon after his publications upon it there appeared a counter-report from the young physician² who took charge of many of his cases and was familiar with all, which cast discredit upon all the master's statements. By Pauly, the truth was, as Becquerel expresses it, "brutally revealed," and it was entirely at variance with the representations of Lisfranc. Since that time the operation has to a certain extent fallen into disrepute, but is still resorted to in appropriate cases.

Dangers.—The dangers of the procedure are the following :—

- Primary hemorrhage ;
- Secondary hemorrhage ;
- Peritonitis ;
- Cellulitis ;
- Tetanus.

The statistics of the operation have not as yet been carefully collected. Lisfranc reported 99 operations and only two deaths, but these statements Pauly renders more than doubtful. Huguier reports 13 operations and no deaths ; Sims over 50 operations and one death ; and Simpson 8 operations and one death.

Even these reports, favorable as they are, refer to the results of amputation by the knife. By galvano-cautery much better results are obtained. It is really surprising to see how little constitutional disturbance follows this operation. Out of the large experience of Dr. Byrne, of Brooklyn, with it, no fatal case is reported ; and only one bad result has occurred in my own practice in over fifty amputations of the whole cervix.

Conditions demanding Amputation.—The conditions which ordinarily call for removal of the cervix are the following :—

- Malignant disease ;
- Great enlargement from cervical hyperplasia ;
- Longitudinal cervical hypertrophy ;
- Conical and projecting cervix ;
- Granular or cystic degeneration of intractable character.

¹ New York Med. Journ., vol. v. No. 5.

² Pauly, *Maladies de l'Utérus*, Paris, 1836.

One of these conditions, longitudinal cervical hypertrophy, not having previously received special mention, requires it here. The cervix may be congenitally very much elongated below the vaginal junction. Generally it undergoes hypertrophic elongation from a simple formative irritation, a low grade of cervical endometritis, congestion long kept up, or prolapsus in the third degree. Under these circumstances the neck grows very long, so as to rest between the labia or even to project for a number of inches from the body, and it has in some instances been mistaken for the penis. By means of the touch, conjoined manipulation, the speculum, and the probe, a diagnosis can readily be made. M. Huguier, some years ago, maintained that this condition often deceived practitioners into the belief in prolapsus uteri.

Varieties of the Operation.—In some cases, as in cancer, for example, it is necessary to remove the entire cervix and even as much tissue as possible from that portion of the organ above the vaginal attachment. In others, only half of the vaginal portion requires ablation, while in still another set of cases, only the removal of a thin section of the hypertrophied lips is called for.

Methods of Performance.—The operation may be performed by the following methods :—

By the bistoury or scissors ;

By the *écraseur* ;

By the galvano-caustic battery.

Operation by Bistoury or Scissors.—When performed by the first method, the patient should be placed upon the left side and Sims's speculum employed. The cervix being slit bilaterally, one lip is seized and cut off as near the vaginal junction as is deemed advisable, and then the other is removed in a similar manner. Formerly the operation was completed at this point, but Dr. Sims has introduced the practice of drawing down the mucous membrane and stitching it, with silver sutures, so as to cover the stump, as that of the arm or thigh is covered by skin after amputation of those parts. When the stump is covered by mucous membrane, after this plan, recovery is much more rapid than when granulation is allowed to accomplish the cure. This operation is often a bloody one.

Operation by the Ecraseur.—In operating by this method, if the uterus be prolapsed, if the degree of longitudinal hypertrophy be so excessive as to cause full protrusion of the cervix, or if such protrusion be attainable by moderate traction, the patient may be placed on the back. If the uterus be high up in the pelvis and strong traction be necessary to depress it, the best position will be found to be that advised when scissors or the bistoury are employed, the speculum being used. The passage of the chain will be found to be very simple, and the part should be slowly cut through.

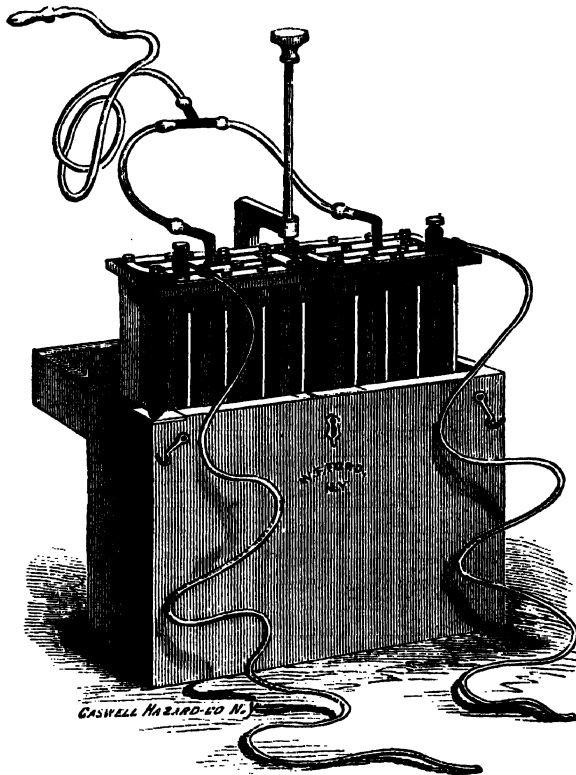
In using the *écraseur* for this purpose, great care should be observed

not to allow of too great dragging of the chain upon the neck without cutting. If attention be not given to this point, the peritæum may be opened or the bladder involved.

I describe the operation by the *écraseur*, although I regard it as inferior in merit to both the other methods mentioned. I do this because the operation is often called for far from surgical centres, where it is very difficult to procure a battery, and where no operator of sufficient skill can be found to perform amputation by cutting instruments.

Operation by Galvano-cautery.—The galvano-caustic apparatus consists simply of an instrument which enables the operator to engage any part in a loop of wire which, being connected with a powerful galvanic battery, becomes red hot and cuts its way through. The instruments generally

FIG. 251.



Byrne's galvano-caustic battery.¹

employed here are a German battery, Middeldorpf's; or Grennett's, a very compact instrument made in London; and one constructed by W. F. Ford,

¹ For details concerning this instrument I refer the reader to Dr. Byrne's interesting brochure entitled *Electro-cautery in Uterine Surgery*, Wm. Wood & Co.

of New York, after a method suggested by Dr. John Byrne. It would be out of place here to give details concerning these instruments; all of them answer the purpose in view very well. That of Dr. Byrne is, for an American, most attainable, and is certainly a very efficient and reliable apparatus. It is shown in Fig. 251.

In amputating the neck in this way, the patient may be placed upon the back, and the uterus drawn down between the labia; or, if this depression of it be difficult, she may be placed upon the side, and Sims's speculum employed. By one of these procedures the part to be amputated is fairly exposed to view and manipulation. The wire loop of the galvano-cautery is passed around the neck as high up as is deemed safe, and tightened until it is fixed in the tissues so as not to slip. Then the current of electricity is made to pass through it, and the loop being slowly tightened by the turning of a screw by the operator the cervix is amputated.

Sometimes the removal of the portion of the cervix desired is difficult of attainment, a scalping process being substituted for a complete amputation. To accomplish the operation completely, I have devised the forceps shown in Fig. 235. By the long, sliding screw between the blades, the cervix is drawn into their grasp and fixed by closing them. Then the screw is withdrawn, and the cold wire slid over the projecting portions and tightened, and, the electric current passing, a red, and not a white, heat being established, the cervix is completely removed.

By this method immediate hemorrhage is usually controlled, but not so remote hemorrhage. Sometimes on the fifth, sixth, or even the tenth day a most active flow takes place in spite of every precaution. For this reason the tampon should be used after such an amputation, and the patient's convalescence be carefully watched.

CHAPTER XLVI.

DISEASES OF THE OVARIES.

History.—Ancient literature is singularly barren upon the subject of ovarian diseases. That the functions of these organs were known to early anatomists, there is no doubt, for as early as 200 B. C. the operation of castration of female animals is alluded to by Aristotle, and in the second century A. C. they were described by Galen under the name of "*testes muliebres*." As to the influence exerted by them upon menstruation, they were not informed, for they attributed that process, according to Aristotle, to a superfluity in the blood, an opinion which was entertained

even by Hippocrates. The works of Aëtius make no mention whatever of ovarian disorders, and those of Paul of Ægina are equally silent. When it is borne in mind that the ovular theory of menstruation dates back for its origin to the labors of Négrier, Gendrin, Bischoff, Pouchet, and others of our own time, and that the operation of ovariectomy was never systematically performed before the year 1809, it will be appreciated how recently the profession even in modern times has fully grappled with the subject.

During the past twenty years full amends have been made for this delay in progress, for in that time no portion of the field of gynecology has received more attention or been more thoroughly investigated than that which now engages us. Not only have most of the diseased conditions of the ovaries been satisfactorily investigated, and the diagnosis of them reduced to a scientific system; for the most frequent and important of them surgical means have been instituted with such success as to have given procedures of the most appalling character and undoubted dangers the position of legitimate and justifiable operations. The recent literature of ovarian pathology and surgery is now enriched by the contributions of so many capable observers, that it is almost invidious to particularize the most prominent. Unfortunately there is one set of ovarian affections with reference to which these statements are not true; those of inflammatory character. Our means of diagnosis of ovaritis, both acute and chronic, is, in spite of all the advances alluded to, so elementary and unreliable that the result is discordance of views, and uncertainty as to pathology and therapeutics. It was probably the contemplation of this fact which led Scanzoni to open his article upon diseases of the ovaries with the following sentence: "If we felicitate ourselves upon the progress which has been made during the last few years, in the diagnosis and treatment of the diseases of the uterus, we should, on the other hand, remember that the labors of gynecologists in respect to the diseases of the ovaries have been almost fruitless in practical results."

In illustration of the difficulties attending the diagnosis of ovarian diseases, I introduce a table which I have constructed from Hennig's¹ report of one hundred post-mortem examinations made by him, with special reference to this point. "If we now turn our attention," says he, "to the diseases of the ovaries, it is a fact of great value, in reference to diagnosis, that in ten out of one hundred cases, the diseased state of the ovary was, or might have been, recognized during life—more frequently by rectal exploration than by vaginal or abdominal." On the other hand, out of 81 bodies, a diseased condition of the ovaries was found in 53, a proof of how frequently disease of the ovaries cannot be recognized during life. The diseased condition was more frequent in one ovary alone than in both; this being found in three-fourths of the cases.

¹ Catarrh of Sexual Organs of the Female. By Carl Hennig.

	No. of cases diseased.	Cysts.	Cystosarcoma and cystoids.	Hypertrophic enlargement.	Exudation on ovary.	Fibroids.	Dermoids.	Fibro-cartilaginous cysts.
Out of eighty-one cases	53	30	5	1	6	9	1	1
" " "								
" " "								
" " "								
" " "								
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Anatomy of the Ovaries.—The ovaries are two follicular glands about the shape and size of small almonds, situated one on each side of the uterus. So dependent are they upon the position of the uterus and surrounding viscera that they have really no fixed place. They are usually found in the lateral and posterior parts of the true pelvis, about an inch from the uterus, and just below the point where the Fallopian tubes enter that organ, the left being in close proximity with the rectum. Each ovary is attached to the peritoneum, which connects it with adjacent structures, and is firmly united with the uterus by means of a fibrous cord arising from the horn of each side.

The Fallopian tube of each side is connected with the ovary by one fimbria, and acts at periods of ovulation as its excretory duct. The surface of the ovary is not covered by peritoneum, for, arrived at the circumference of these organs, this membrane loses its characteristic appearances, and the only trace of it which is discoverable is a layer of basement-epithelium.¹ Around the circumference of the ovaries a cortical portion exists, whose duty it is to generate the Graafian follicles. Within this is a fibrous structure, composed of muscular fibres, cellular tissue, vessels, and nerves, which receives the name of stroma. Removed from the stroma and examined with care by the microscope, each of the Graafian vesicles is found to consist of a sac, called the tunic, which is filled with fluid, the liquor folliculi, in which is contained the ovum or egg which is the female contribution to conception.

It is now accepted as a fact by most physiologists, although still contested by some, that the periodical discharge of blood from the uterus, which is called menstruation, is merely a uterine symptom of the discharge of one of the ova from the ovary by rupture of a follicle. After the period of puberty has arrived, one or more of the follicles of each ovary burst every month by the following process: a congestion or hyperæmia occur-

¹ For details with regard to these curious and recently discovered facts, the reader is referred to essays by Otto Schrone, Henle, and Sappey.

ring in the ovary for some reason beyond our comprehension, causes an excessive secretion by the walls of the follicle, in which a miniature dropsy takes place. This goes on to rupture, and escape of the liquor folliculi, blood, granular cells lining the ovisac, and the ovum. The nerve supply to both uterus and ovaries is excited by this process, and one of the results of such excitement is contraction of the delicate middle layer of uterine fibres which surround the network of minute vessels enveloping and penetrating the uterine structure. This throws the vascular apparatus into a state of erection. Great engorgement occurs on the surface of the uterine mucous membrane, and probably on that lining the Fallopian tubes; they rupture, and a flow of blood takes place. Three elements are concerned in this discharge: 1st, ovarian irritation excited by ovulation and transmitted to the nerves governing the muscles constituting the middle coat of uterine fibres; 2d, erection of the uterine vascular system; 3d, consequent rupture of the bloodvessels of the mucous membrane of the uterus and escape of blood. The ovisac being thus emptied, a clot of blood soon forms within it, then an hypertrophy of the cells lining it occurs, and the corpus luteum is formed.

If the examiner hold up one of the broad ligaments between himself and the light, a small plexus of white, crooked tubes will be seen forming a cone, the apex of which is directed towards the hilus of the ovary. It measures about an inch in breadth, and consists of about twenty tubes which are filled with a clear fluid. This is the organ of Rosenmüller, which has recently been minutely described by Kobelt under the name of the par-ovarium, and is supposed by him to be an exaggeration of the Wolffian body. The exact location of the par-ovaria is this: they lie beneath the ovaries and between the ultimate folds of the peritoneum covering the fimbriated extremities of the Fallopian tubes, which have received the name of the *alæ vespertilionum*.

The ovaries are supplied with blood through the spermatic arteries, which, upon arriving at the margin of the pelvis, pass inwards between the layers of the broad ligaments, and thus reach their lower border. Their nervous supply is not extensive, and is derived from the renal plexus.

The ovary presents its most perfect type in the young virgin, when its dimensions are greatest and its surface undeformed by the numerous cicatrices which appear at a later period. The dimensions of this organ are greater than they are during early virgin life only during and for six weeks after the process of utero-gestation. Hennig, who has made a special and exceedingly minute study of this point, declares that pregnancy increases the length but not the breadth nor the thickness of the organ. Utero-gestation, which leaves the uterus larger than it was before, has the contrary effect upon the ovaries, which after its accomplishment diminish in size, never again to attain their former dimensions while in a state of health.

Varieties of Ovarian Disease.—Any one or all of the tissues which have been mentioned may be affected by disease, or the position of the ovary may be altered to such an extent as to constitute a morbid state. The following table presents a list of the disorders of these glands which will now receive special attention :—

Absence ;
 Imperfect development ;
 Atrophy ;
 Inflammation ;
 Neoplasms.

Absence.

One or both of the ovaries may be congenitally absent, but such a condition is very rare. When it does exist, it is generally only a part of a complete want of genital development which is manifested not only by these organs but by the parts making up the vulva, the vagina, and the uterus. Kiwisch declares that it has been most frequently observed in the bodies of newly-born infants who were not viable on account of complicated deformities. Where there is congenital absence of the ovaries the woman is generally small in stature, her figure undeveloped, as if the period of girlhood were abnormally prolonged, and the genital system imperfect, as already mentioned. In some cases the mind is very deficient, a condition bordering upon idiocy sometimes existing. In others this is not the case, but the patient suffers from depression of spirits, and appears to lack vigor both of mind and body. Development into womanhood has never arrived for her, and she remains a child without the vivacity and cheerfulness of childhood.

Although certainty can only be arrived at post mortem, a diagnosis may be made during life by the use of Simon's method, which may guide us in prognosis and treatment. Indeed, one of the greatest benefits which can accrue from a correct conclusion will consist in the avoidance of all efforts which, being vainly addressed to exciting the performance of the functions of the ovaries, deteriorate the state of the patient. Should the general condition of the patient, the undeveloped state of the vulva, vagina, and uterus, and the entire absence of the menstrual crisis combine as evidences of the condition, a diagnosis is admissible.

Imperfect Development.

This condition, which consists in persistence of the fœtal state of these organs after the period of puberty when rapid development should have occurred, is by no means so rare as that just mentioned. It may exist on one side only, though it generally affects both. As in the case of absence of the ovaries, a certain conclusion is not easy, and as in that case, also, we draw a presumptive conclusion from want of development in the other

organs of generation, absence of the usual signs of the menstrual crisis, and lack of general constitutional vigor and development.

As examples of cases susceptible of such an explanation, I record the histories of two with which I have recently met. The first is that of Miss F., referred to me by Dr. Rodenstein, of Manhattanville. She is twenty-four years of age, and yet has the appearance of a girl of thirteen. Indeed, it is difficult to believe the statement that she is more than that age. The features, limbs, mode of expression, and general deportment are those of a child. She has never menstruated nor shown any evidences of a tendency to do so. Physical exploration shows the vulva in the state of early girlhood, the mons veneris destitute of hair, the labia thin, and the vagina so small and narrow that the little finger only can be introduced, and that causes great suffering. The canal being short as well as narrow, the uterus can be touched, and is found like a little nut in the vagina, so light that its weight is scarcely perceptible.

The second case is one which I saw with Prof. W. H. Thompson. The patient is eighteen years old, and has never menstruated. Previous to the treatment established by Dr. Thompson, she suffered greatly from epileptic seizures, which have evidently impaired the force of her intellect, but during the two months before I saw her she had been free from them. The girl is slow in her movements, childish in manner, and stupid in replying to questions. Upon physical exploration, the vulva, vagina, and uterus are found fully and perfectly developed, the latter giving by measurement, with the uterine probe, two and a half inches. Nothing can be elicited with reference to the ovaries by physical means, but the rational signs mentioned, together with the fact that all the appearances of girlhood are combined with entire absence of any apparent effort at ovulation, render the supposition that the ovaries are undeveloped, or foetal, highly probable.

Sometimes cases will be met with in which masculine development, emansio-mensium, and sterility will lead to a diagnosis of absence of the ovaries, but which will subsequently undergo a change and give all the evidences of the presence and efficiency of these organs. One such case, which occurred in the practice of Dr. Metcalfe and myself, is worthy of record. Mrs. B., a large, muscular, and handsome woman, had menstruated very irregularly and scantily for ten or fifteen years. Sometimes the menstrual discharge would be entirely absent for months, then it would at long and irregular intervals show itself for a day. Her health was not affected by this in any way. She presented, however, many signs of masculinity; the voice was harsh, the breasts flat, and the chin covered with a sparse beard. After having been married for years she became pregnant, and in due time bore a child, subsequent to which she menstruated more regularly and plentifully, and has since borne two children.

Treatment.—Should the ovaries be congenitally absent, it is evident that art can do nothing to remedy the evil. Should they exist in an

undeveloped or foetal state, it is possible that, by a proper stimulus applied to them by the most direct means in our power, growth and maturity may be fostered, unless the condition be one of aggravated arrest of development. The means which are most likely to accomplish this are—

General tonics ;
 Uterine irritation ;
 Electricity ;
 Marriage.

The sanguineous and nervous systems should both be brought into as perfect a state of health as possible by ferruginous and bitter tonics, fresh air, exercise, change of scene, and a general observance of the laws of hygiene.

The most direct method for irritating the ovaries is through the uterus, with which so close a sympathy exists. For this purpose tents may be occasionally resorted to, as often, for instance, as once or twice a month. This not only prepares the uterus for its part of the process of menstruation, but causes a hyperæmia in the ovaries, which we know to be the physiological forerunner of ovulation.

Electricity may be employed by placing one pole of a battery over the spine and one over the ovaries, or, more effectually, by carrying one pole, protected where it touches the vagina, to the cervix uteri, connecting this with a battery, and passing the other pole over the ovaries. An intra-uterine galvanic pessary may likewise answer a good purpose, when worn steadily and persistently.

The ovarian irritation and congestion incident to the marital act will sometimes excite ovulation, not at the moment of coition, as was formerly supposed, but remotely.

Atrophy of the Ovaries.

At a period, varying from the fortieth to the fiftieth year, the ovaries are destined to undergo atrophy. They diminish in volume, become wrinkled, the Graafian follicles disappear, and the stroma becomes dense and non-vascular. This is a physiological process, and marks what is termed the menopause, or period of menstrual cessation. Sometimes this process sets in at a very early period, owing to some abnormal condition which has excited it, and produces the same results as those following it when it takes place at the normal time.

Causes.—With regard to the special causes of this occurrence very little is absolutely known, further than the fact that it sometimes occurs from pelvic inflammations. It is probable that acute ovaritis may produce it, and it is certain that, at times, it results from pelvic peritonitis and cellulitis.

The following case which presented itself at my clinique some time ago is illustrative of this fact. Mary G., a healthy young Irish woman, aged

24 years, stated that she had a miscarriage at the third menstrual period, five years before, in Albany. Three days after the product of conception had been cast off, she was taken with a chill, with violent pain over the abdomen, and was declared by her physician to have inflammation of the bowels. Of this attack she nearly died, but after a confinement to bed for six weeks grew better. For two years after this she had irregular, painful, and profuse menstruation. As she expressed it, whenever she became fatigued or excited, flooding would come on. After this time the menstrual periods disappeared, and she now applied for relief on account of amenorrhœa of three years' standing. Physical exploration revealed the uterus in normal position, though diminished in size to about two inches. Nothing could be ascertained about the ovaries.

The view which I took of the case was that pelvic peritonitis and acute ovaritis originally existed; these left the parts in such a state that for two years metrorrhagia and menorrhagia occurred; then subsequent contraction occurring in the effused lymph in and around the ovaries, atrophy resulted with its usual consequence, amenorrhœa.

The peculiarly destructive influence exerted upon the ovaries by pelvic peritonitis will be impressed upon any one who makes an autopsy in a patient who has died of that affection, or who reads the reports of others. Very often the ovaries cannot be discovered in the mass of "putrilage" which occupies their site.

Treatment.—An attempt may be made, by the means recommended in the treatment of undeveloped ovaries, to excite ovulation in any part of the glands which may still be capable of performing the function. But it should not be persisted in if not at once attended by good results, for inflammatory action may be excited by it. When these means are essayed, great caution should be observed and their influence developed only to a limited degree.

Ovarian Apoplexy.

Definition.—The word apoplexy is very loosely employed in reference to sanguineous effusions in all the organs of the body, some signifying by it sudden vascular rupture, while others apply it to interstitial hemorrhage occurring even very slowly. This has created confusion of description, and certainly added difficulty to the clear comprehension of the pathological states to which it has been synonymously applied. Thus, in describing ovarian apoplexy, Kiwisch¹ divides it into primary and secondary, considering as examples of the latter, hemorrhage from the walls of a cyst which fills it slowly with blood, or hemorrhage the result of tapping. The two conditions should be regarded as essentially different, and I would offer this as the proper definition of our subject. Apoplexy of the ovary

¹ Op. cit., p. 232.

consists in a rapid effusion into its tissue of blood, which results from rupture of one or more of its larger vessels.

The ovaries present the only example in the animal economy of apoplexy occurring as a physiological act. At each menstrual period, as an ovule leaves its nidus, an apoplexy from the vessels of the tunic of the ovisac occurs as a necessary consequence. It is this which, upon subsequent alteration, constitutes the corpus luteum. Generally these hemorrhages are self-limiting, and their effects rapidly disappear; in some cases, however, the bleeding continues too long or returns after cessation, and then the collection of blood sometimes reaches the size of a man's fist or of a child's head.¹ In some instances the tunica albuginea of the ovary is completely ruptured, when the effused blood pours into the most dependent portion of the pelvic cavity, constituting pelvic hemocele.

Symptoms.—The occurrence of apoplexy is often ascertained only in autopsy, no signs existing during life by which it can be positively diagnosed. The symptoms which will usually point to its existence are sudden and violent pain over the region of one ovary, with sense of great exhaustion, nausea, and vomiting. These symptoms, if combined with enlargement and tenderness of one ovary, as ascertained by conjoined manipulation, will be sufficient to render a diagnosis warrantable if the patient's health has previously been good.

Prognosis.—The great danger from the accident is peritonitis, arising either from implication of the peritoneal fold which makes the broad ligament, or from rupture of the cortical portion of the ovary and occurrence of hemocele.

Treatment.—Should there be symptoms of peritonitis, the treatment elsewhere recommended should be adopted. Beyond this, all that can be done is to keep the patient quiet in the recumbent posture, and prevent all muscular effort until absorption occurs.

Displacement of the Ovaries.

The extreme mobility of these glands and the laxity of their supports have already been remarked upon. Any influence which increases their weight, draws upon them directly, or acts upon them by traction through a neighboring organ, may cause them to leave their position, and even in rare cases to pass out of the pelvis in the form of hernia. For example, they may be displaced by inflammation, hypertrophy, ovarian foetation, etc., which cause increase of weight; or they may be acted upon by contractions of effused lymph, resulting from pelvic peritonitis; contraction of the ovarian ligaments, etc., drawing them out of place; or they may be affected by displacement of the uterus, pregnancy, or hernia of any

¹ Kiwisch, op cit., p. 232.

of the abdominal viscera acting upon them by means of traction. A hernia of the ovary alone is very rare; it is almost always attended by hernia of the Fallopian tube, or some portion of the intestines or omentum.

The ovaries often fall, when their weight is increased, into the cul-de-sac of Douglas. More rarely they pass into the inguinal canals, or through them into the dartoid sacs of the labia majora. Here they show a monthly intumescence, which creates great local disturbance, and keeps the part swollen, heated, and tender, until ovulation is passed. Deneux¹ declares that they may enter the femoral, umbilical, and ischiatic openings, or form a part of ventral hernia, and Kiwisch has reported a case in which one entered the foramen ovale. The accident is rarely important in its results except in reference to excluding the suspicion of other forms of tumor, and avoiding the danger of surgical interference under a mistaken diagnosis.

Treatment.—The treatment consists in returning the displaced part by taxis, and keeping it *in situ* by a properly constructed truss, pessary, or bandage. Should the gland be bound in its false position by strong membranes, the propriety of its removal might be considered, in case serious inconvenience resulted from the displacement.

Ovaritis.

Definition.—By this term is meant an inflammation of the tissue comprising the ovaries, which has been described by some authors under the name of Oöphoritis. A dogmatic treatise upon ovaritis in the non-puerperal woman is, in the present state of science, impossible. So much concerning the disease is unsettled, and such utterly discordant views are entertained upon it by the most reliable authorities, that too great caution cannot be observed in treating of the subject, lest theories constructed upon analogical reasoning be made to pass current in the mind of the reader for facts faithfully observed at the bedside and in the dead-house. No writer should attempt its description without determining as Aran did, when he penned the following sentence: “I leave out of consideration all the fantastic descriptions of ovaritis which have been constructed in the library by physicians who were more remarkable for brilliancy of imagination than knowledge of the disease.” Our knowledge of the subject is at least so far advanced as to make a theoretical essay upon it entirely inadmissible.

Varieties.—Ovaritis may be either puerperal or non-puerperal. The first does not concern our present investigation, and we put it out of consideration. The non-puerperal form of the disease has been divided into acute and chronic, which will now engage us in order.

¹ Recherches sur la Hernie de l'Ovaire.

Acute Ovaritis.

This affection, though very common as a result of parturition or abortion, is, except as a complication of pelvic peritonitis or cellulitis, quite rare in the non-puerperal woman. Mme. Boivin¹ even goes so far as to say that, "it would be difficult to point to a single well-authenticated case out of the condition of pregnancy." Dr. West² remarks that, "acute inflammation of the substance of the unimpregnated ovary is of such rare occurrence that no case has come under my own care, and but one has presented itself to my observation." Prof. Fordyce Barker³ says, "I doubt very much if I have ever seen a clear, well-marked case, and I have been for years looking for its existence in the dead-house." There can be no question of the truth of these statements as regards pure uncomplicated inflammation of the ovary, but ovaritis of acute character going on to suppuration or production of a diffuent state of the stroma, is by no means rare as a complication of pelvic cellulitis or peritonitis. One of the greatest dangers to be feared from these diseases is injury or destruction of the ovaries, and it is probable that few cases of cellulitis and none of peritonitis run their course without involving them to a greater or less extent. It is likewise probable that pelvic peritonitis is frequently excited by some trouble originating in the ovaries, which are closely in contact with the peritoneum making up the broad ligaments and covering the pelvic roof. The intimate relation of these parts, the ovaries, the pelvic peritoneum, and the pelvic areolar tissue, accounts for the fact that uncomplicated acute ovaritis is rarely met with.

In proof of this statement let me point to the conditions of the ovaries in the autopsies of periuterine cellulitis reported by Aran. In almost all instances they were diseased, and they generally contained pus. So common was this lesion that Aran was persuaded that "the purulent collections which, as a consequence of periuterine inflammation, discharge themselves into the peritoneum or into the organs in the neighborhood of which they are placed, rectum, bladder, vagina, etc., sometimes even by the surface, belong more particularly to the ovary or tube."

Since the writings of Aran, no one has done more to put in a strong and proper light the intimate relations existing between inflammation of the ovaries, suppuration, and pelvic peritonitis and cellulitis than Dr. Matthews Duncan. He regards these periuterine inflammations as always symptomatic affections; as secondary to uterine, tubal, or ovarian disease, or noxious discharges entering the peritoneal cavity through the tubes. At the same time that I differ from Dr. Duncan, in looking upon periuterine inflammation as not infrequently primary, and as commonly

¹ Op. cit.² Op. cit., p. 473.³ Bul. N. Y. Acad. Med., vol. i. p. 549.

resulting in acute or chronic ovaritis and abscess, I admit that the sequence of events is often that which he states.

Authors have divided acute ovaritis into parenchymatous, follicular, and peritoneal, but in an affection, the mere recognition of which is so difficult, it is hardly wise to refine upon its peculiarities. The form of the affection styled peritoneal is really not ovaritis, but peritonitis of the very character of which we are speaking; from which to parenchymatous and follicular disease there is only one step. As an example of ovaritis complicated with peritonitis in a non-pregnant woman, I avail myself of the kindness of Dr. Roth, and record the following history prepared by him.

"M. S., æt. 35, married ten years, had a miscarriage nine years ago. Since that time has suffered from dysmenorrhœa and gastric disorder, which was styled dyspepsia. Two years ago she applied to me, and I found her suffering from profuse fluor albus and retroflexion of the womb. Under use of caustics and tonics she improved very much, and treatment was stopped. I did not see her again until August 1, 1866, when I found her in a convulsion. After it had passed off she vomited constantly, complained of great pain in the bowels, was very thirsty, and the pulse was near a hundred. Opium was freely administered. On the next day the pulse was over one hundred; skin hot and dry; and she complained of severe pain in back and loins, and over left iliac fossa. I made a vaginal examination by touch, but could discover nothing, except that the vagina was very hot and dry. Aug. 3. No great change, except that the abdomen became tympanitic. Aug. 4. She lost about five ounces of blood per vaginam; symptoms unchanged. Aug. 6. She was seen in consultation by Prof. Thomas, who diagnosticated pelvic peritonitis with probable acute ovaritis on left side, and anticipated formation of an abscess near or in the ovary. By his advice a large blister was applied over the hypogastrium, and opium given in very large doses. The case went on in this way until Aug. 11th, when she suddenly vomited a large amount of bile, became collapsed, and died that night.

"*Autopsy eighteen hours after death.*—The peritoneum covering the pelvic viscera was covered with a recent lymph, and between the organs a great deal of puriform serum existed. Abdominal peritoneum healthy. The left ovary, which was agglutinated to the intestines, tube, and uterus, was about the size of a hen's egg. In its removal it was broken, and several ounces of pure pus escaped. No evidences of cellulitis could be discovered upon careful dissection. Other organs healthy."

"*Pathology.*—This is not clearly made out, though it appears safe to accept the stages described by Mme. Boivin: first stage, congestion, with increase of weight and rotundity; second stage, the organ double, triple, or quadruple its normal size, tissue soft and infiltrated with yellow and violet-colored serum, with slight effusion of blood; third stage, suppur-

tion, pus infiltrated or collected in spots; fourth stage, gray softening, disorganization, the gland becoming diffuent.

Causes.—The causes of the disease may be thus enumerated:—

- Pelvic peritonitis;
- Periuterine cellulitis;
- Gonorrhœa;
- Disturbance of menstruation.

Any of the causes which have been spoken of as sufficient to cause the first two diseases mentioned may through them produce ovaritis. A form of ovaritis called blennorrhagic is admitted by most authors as corresponding with blennorrhagic orchitis in the male. It is difficult to see how even the progress of gonorrhœal inflammation along the tubes would cause disease of an organ not connected with the extremities of these tubes, but let it be remembered that gonorrhœa is in this way one of the most fruitful sources of pelvic peritonitis, and an exploration of ovaritis as a secondary result will suggest itself. Suppression of menstruation, or any sudden and violent shock given to the ovaries while ovulation is progressing and the walls of the organ are about being broken through, may likewise induce it.

Symptoms.—The symptoms of this affection are so intimately associated with those of peritonitis and cellulitis that it is impossible to separate them. There is severe pain in one or other iliac fossa, with increase of heat, fever, and perhaps chill. Pressure shows the most exquisite sensitiveness, and when the part is examined by conjoined manipulation this is excessive. By that means the ovary is felt enlarged and generally depressed in the pelvis. These symptoms may subside upon the occurrence of resolution in four or five days; or pus forming within the gland may be discharged into the peritoneum, the rectum, the vagina, or the bladder.

Differentiation.—This is generally impossible. The association of the disease with those which have been mentioned as being at times its causes, at others its consequences, is usually too intimate for its distinction from them. Should conjoined manipulation discover the ovary as a round ball, very sensitive, and unassociated with fixation of the uterus, a diagnosis would be admissible. I have never met with such a case of acute character, nor is it likely that it often occurs, though in subacute or chronic ovaritis these physical signs are common.

Prognosis.—The prognosis is favorable, though never free from an element of doubt.

Treatment.—Leeches may be applied around the anus, over the diseased organ, or at the groin. Should its weight not give pain, a poultice should then be placed over the hypogastrium, and opium freely administered by mouth or rectum. The patient should be kept perfectly quiet, and not allowed to rise from her bed even for relief to the calls of nature. Espe-

cial care in this regard should be observed if it be supposed that suppuration has occurred, for then a very slight effort might cause a rupture of the abscess into the peritoneum.

Chronic Ovaritis.

Chronic inflammation of the ovaries is an affection of common occurrence, though very little has been ascertained as to the exact frequency of the disease. So great is the sympathy existing between the uterus and these organs, that uterine disorders excite ovarian pain very commonly, and give rise to many symptoms which are regarded as characteristic of this disease. Again, it is a well-ascertained fact that slight attacks of chronic pelvic peritonitis are extremely common, and unfortunately we possess no certain means for distinguishing such a disorder, in the vicinity of an ovary, from chronic ovaritis.

In the great majority of cases of uterine disease the patient will complain of pain, of dull, aching character, over one or both ovaries, and this will very likely be augmented by menstruation. But it is by no means to be concluded that this sympathetic pain, even if dependent, as it very often is, upon congestion, is due to chronic ovaritis. As well might it be believed that mammary pains excited in the same manner are due to mammitis.

As a primary affection which creates secondary uterine disorder and results in dysmenorrhœa, sterility, and hysteria, it is by no means rare. Many cases supposed to be obscure and unmanageable ones of uterine disorder, many in which the physician is sorely puzzled in accounting for the wonderful disproportion between the existing symptoms and the degree of uterine disorder discoverable, are due to this affection. Instances will not rarely be met with in which with slight uterine displacement, and a catarrh of no great moment, a patient will be entirely unable to stand or walk, except for very short periods of time, will for years prove sterile, and will suffer from agonizing dysmenorrhœa from this cause. The revival of uterine pathology has drawn off attention too completely from the ovaries. The coming decennium will, I feel convinced, prove that in many cases disease of these most important organs in the female economy is the source of many ills now attributed to that less important viscus the uterus. It is in the study of ovarian, not uterine, pathology, that the next great advances in gynecology are to be made.

Symptoms.—The symptoms of chronic ovaritis are numerous and often perplexing; no two cases of the affection presenting the same features. In some they are physical entirely, while in others the mind and nervous system are decidedly involved. In several cases in my experience true epilepsy has existed, whether as a consequence or not I cannot say, but certainly as a very suspicious complication.

The rational signs may be enumerated as—

- Dysmenorrhœa ;
- Fixed pain over one or both ovaries ;
- Tendency to hysteria ;
- Rarely inability to stand or walk ;
- Sometimes pain on sexual intercourse ;
- Pain and exhaustion after defecation ;
- Pain in rectum and down thighs ;
- Irregular menstruation ;
- Frequently leucorrhœa ;
- Sterility if both ovaries are diseased.

Dysmenorrhœa often precedes menstruation by several days. At other times it occurs just after the cessation of the menstrual discharge ; while in a few cases it occurs in the interval between the menstrual periods. The last constitutes the intermediate dysmenorrhœa of Dr. Priestly, and is a most interesting symptom. At times it occurs with great regularity. In one case which occurred in my practice it showed itself invariably on the ninth day, and in another on the fourteenth. Ovarian dysmenorrhœa produces great nervous disturbance, which renders the patient peculiarly prone to seek relief in the use of opium.

I have met with several cases of this disease in which the patients have been unable to stand or walk, except for a few minutes.

If the ovary be prolapsed, sexual intercourse often proves a source of pain, but not otherwise.

The menstrual discharge is sometimes very irregular, remaining absent for months, and then showing itself as an alarming hemorrhage. In many cases it is quite regular both as to time of occurrence and amount.

The continued uterine irritation kept up by chronic ovaritis often engenders uterine catarrh, which proves, in consequence of its cause, very intractable to treatment.

That in many cases the patients become pregnant cannot be questioned, but, as a rule, where both ovaries are diseased sterility exists. It is highly probable that the diseased organs produce diseased or imperfect ova.

Physical Signs.—The patient being examined by touch and conjoined manipulation, the uterus will, for some reason which I cannot appreciate, be usually found to deviate from its normal axis, laterally, anteriorly, or posteriorly, and from the cervical canal a thick, mucous plug will often be found to hang. In Douglas's cul-de-sac, on one, or on each side of the uterus, a round, soft, tender body, about as large as a walnut, will be found. This, when caught between the fingers, in conjoined manipulation, will prove very sensitive to pressure, which will often produce nausea and tendency to hysteria ; and even after it has been desisted from, a dull aching pain will generally remain.

Prognosis.—I know of few curable disorders which I dread so much to meet as this. The day will probably come when our treatment for it will be satisfactory and efficient, but it has not yet done so by any means. Many cases will entirely baffle treatment, while all will prove little amenable to it. That they often in time recover is true, but recoveries have, in my experience, but little connection with treatment.

Treatment.—I have nothing better to offer than the following course, the meagreness of which I regret. If the ovaries be found prolapsed they should be carefully sustained by a light, elastic ring pessary, and if the displaced uterus press upon them it should be kept in position. Sexual intercourse should be limited as far as possible. If scanty menstruation exist as a symptom, one or two leeches should be applied every month to the cervix uteri. Rest should be prescribed during menstrual epochs, when the diseased glands are congested and in a state of nervous excitement. Severe exercise or fatiguing occupations should be avoided, and all influences calculated to depress the vital forces carefully guarded against. Counter-irritation, by means of small blisters, tincture of iodine, or issues of nitric acid, should be kept up over the diseased organs for months at a time, and once or twice a week the cervix uteri and the whole upper part of the vagina should be painted over with tincture of iodine. Every night and morning the patient should be directed to use copious injections of warm water into the vagina in the manner elsewhere explained. For the various nervous symptoms which accompany the affection the bromide of potassium in ten to fifteen grain doses will be found very beneficial. Utero-gestation, which secures the ovaries from monthly congestions for nine months, is always much to be desired under these circumstances.

Should evidence be elicited that small cysts exist in the enlarged and tender ovaries, they may with advantage be punctured and evacuated by the smallest needle of the aspirator, the operation being performed antiseptically.

It is now six years since the publication of the last edition of this work, and during that time no disease has more especially commanded my close scrutiny than this, and yet, in an amended edition after that lapse of time, I find myself unable to offer any improvement upon what was written then!

CHAPTER XLVII.

OVARIAN TUMORS.

WITHIN the last twenty-five years important advances have been made in our knowledge of those pathological developments called tumors. The progress, which about the beginning of that period Rokitansky inaugurated, has since culminated in the eminent labors of Virchow. Had we now reached a standpoint which gave complete satisfaction to pathologists, it would be an easy matter to offer a simple digest of the whole subject for the contemplation of the student. But this is far from being the present aspect of the subject. Changes are constantly being made in nomenclature; views as to pathology are daily being altered; and classification is in consequence undergoing frequent alterations. This presents evident difficulties for one who, not being entitled by personal researches to original views, is forced to rely upon the workers in pathological anatomy for his authority. All who have really studied the subject of tumors will admit the force of this statement, and from such I have no fears of a severe judgment upon the table by which I here endeavor to display at a glance the varieties of ovarian tumors. I am fully aware of its imperfections, but I know of no better method for simplifying a difficult subject so as to make it easily comprehensible to the general reader, and none which will prove so useful in clinical investigation.

For the purpose of facilitating the clinical study of ovarian tumors, it is probably best to consider them under two heads: first, those which are solid and free from cystic development; second, those which are characterized by such development.

The following table presents at a glance these genera and those of their species which are met with at the bedside, not as pathological curiosities, but as diseased conditions requiring surgical interference. Certain forms which are rarely met with, even by the most industrious morbid anatomists, will receive casual mention, but I cannot believe that good arises from blending these in description with others which are constantly presenting themselves to the attention of the practitioner. I also introduce here a table presenting other pelvic cysts resembling ovarian cysts so closely that a differentiation is exceedingly difficult.

Ovarian tumors	Solid tumors	{ Carcinoma ; Fibroma.
	Cystic tumors	{ Cysto-carcinoma ; Cysto-fibroma or sarcoma ; Dermoid cysts ; ¹ Ovarian cysts and cystomata.
Pelvic cysts closely resembling ovarian		{ Cysts of broad ligaments ; Parasitic cysts ; Hydro-salpinx ; Uterine cysts and fibro-cysts ; Encysted peritoneal dropsy ; Subperitoneal cysts ; Cysts connected with the spinal cord ; Renal, splenic, and hepatic cysts.

Under the head of solid tumors, enchondroma and osteoma have been reported, but the authenticity of the few cases noted is very doubtful. Under that of cystic tumors might be mentioned hydrops folliculorum, which sometimes creates a sac as large as a child's head, and Rindfleisch describes a rare form of cysto-colloid degeneration of both ovaries growing larger than a man's fist, to which he applies the name of struma ovarii. These affections, of great interest to the pathologist, I have not thought it best to classify with the more frequent forms of ovarian disease which commonly call, not for diagnosis merely, but for surgical interference, for fear of uselessly complicating the already difficult subject of diagnosis.

Carcinoma.—The ovary may be affected by several varieties of cancerous deposit, which are here placed before the reader :—

1. It may be affected by true scirrhus degeneration. This form of cancer is less common than others, occurs usually after middle life, and may create a tumor of large dimensions. It develops slowly, and presents the physical appearance of scirrhus disease in other organs ; it may be a primary malignant development ; or it may occur in the ovary secondarily, its primary development having been previously recognized in some other part of the system.

2. The ovary may be the seat of medullary cancerous deposit, which may originate in the vesicles of De Graaf ; in a corpus luteum, as Rokitsansky once saw it do ; or in the stroma of the organ. Distention sometimes causes rupture of the tunica albuginea of the ovary, and then exuberant medullary growth develops in contact with the peritoneum and abdominal viscera.

¹ A cyst is a collection of fluid developed within a pre-existing sac ; a cystoma one which creates its own sac.

3. Scirrhus or medullary cancer may alone or united attack the wall of a cyst, and develop either as an endogenous or exogenous production. The cancerous matter so completely invades the cyst walls in some cases as to make it appear that cystic degeneration had occurred secondarily to its deposit.

4. From the wall of a cyst, vascular, arborescent villi may project, lining the cavity, and, in time, filling and distending it so as to cause the rupture of its walls. Then the exuberant cancerous element develops in immediate contact with the peritoneum, and produces either a dangerous peritonitis or abundant abdominal dropsy.

With this form of cancer colloid degeneration is often associated, when it constitutes that variety which has been described by Cruveilhier as alveolar cancer.

The recognition of the fact that the ovarian disease which affects a patient partakes of the character of any one of the forms of cancer just enumerated, must ever be a matter of great moment, for upon it must depend not only our prognosis, but in some cases the determination to adopt or reject the operation of ovariectomy. Even if the case be one of malignant disease, however, operative procedure may accomplish good by prolongation of life.

The symptoms which generally point to the malignant character of an ovarian tumor are these :—

1. The rapid development of a solid tumor in an ovary, with—
2. Marked depreciation of the strength, vital forces, spirits, and general condition of the patient.
3. The occurrence of œdema pedum and spanœmia with a small tumor, which are consequently dependent upon a general blood state, and not the results of pressure by the tumor.
4. Lancinating and burning pains through the tumor.
5. Cachectic appearance.
6. The occurrence of ascites without evidences of cirrhosis or other hepatic disease; organic disease of the kidneys, or heart; or chronic peritonitis.

Cystic degeneration of the ovary sometimes advances with great rapidity, and is accompanied in its course by rapid emaciation, marked physical prostration, ascites, and a cachectic appearance. It may be asked whether a case thus complicated would not present the very conditions which have been pointed out as furnishing grounds for the diagnosis of malignant disease. Unquestionably it would. Let it be remembered that while these symptoms are mentioned as valuable aids to diagnosis, I do not pretend to maintain that they will always enable the diagnostician to avoid error. Again, in citing ascites with a solid tumor as a most important symptom of malignant ovarian disease, I do not allude to slight or even moderate effusion with a large growth, but a markedly disproportionate amount of fluid, a great deal of abdominal effusion with a very small tumor.

Besides the condition just mentioned there are two others which may create difficulty in differentiation from ovarian cancer: one is pregnancy in the middle or latter months, complicated by peritoneal effusion; the other, a uterine fibroid existing with attendant dropsy. The first may generally be known by its characteristic symptoms; while the second, although it might be recognized by the physical and rational signs of uterine fibroids, would very likely give considerable trouble in diagnosis.

When difficult and obscure cases present themselves in which a positive diagnosis becomes impossible by ordinary means, paracentesis, explorative incision, or both, should be resorted to rather than that the patient should be deprived of the prospect for cure held out to her by ovariectomy. Very often the most doubtful case may be satisfactorily settled by evacuating the abdominal effusion, and passing the index finger or the hand through a small opening in the peritoneum so as to touch the morbid growth. In certain rare cases even this would not suffice to remove all doubt.

By the means mentioned I have succeeded in making a correct diagnosis in many cases of true ovarian cancer, but in relying upon them I have twice failed entirely, pronouncing as cancer what afterwards turned out to be benign growths. Cystic ovarian tumors may unquestionably produce excessive ascites and all of the other rational signs which I have here recorded as evidences of cancer.

Fortunately we are not called upon now to rely upon these imperfect means. A very valuable addition to our means for diagnosing carcinoma of the ovary has within the last three years been put at our disposal by Drs. Foulis of Edinburgh, and Thornton of London, each working without knowledge of the other's labors. They have found that if the peritoneal fluid which has been in contact with malignant ovarian tumors be examined microscopically, it will be very generally found to contain germs which will announce the fact and put us on our guard as to the nature of the disease. Their statements may be found in the *British Medical Journal* for July and September, 1877, and are well worth careful study.

Fibroma, or Fibrous Tumor.—This form of tumor is rarely met with in the ovary, and never attains a very great size. Kiwisch reports two cases, one the size of a child's, and the other the size of a small adult head. Dr. Farre discredits the reports of large ovarian fibroids which are upon record, and believes them to have been in reality either cancerous tumors or growths connected with the uterus, which so encroached upon the ovaries as to seem to have sprung from them. Periuterine fibroids which spring, not from the uterus itself, but from the extension of uterine fibres into the broad and utero-sacral ligaments, have probably often given rise to errors in reports of such tumors. Many of the reported cases of ovarian fibroids have likewise been due to confusion of this form of tumor with cysto-fibroma. When the disease does affect the ovary, it differs in no essential degree from the same affection of the uterus, except

that pediculation does not occur as in the latter organ, and that the growth of the tumor is much more limited.

The reader must be reminded that these remarks apply to the pure fibroid and not the fibro-cystic ovarian tumor, which may attain an immense size, and is always to be regarded as a serious disease. They likewise apply to the development of fibroid tissue into true fibromata, for in the walls of cystic and cystomatous growths fibroid tissue is commonly developed.

Virchow believes that of the well-authenticated cases of true ovarian fibroma, the size has varied between that of a hen's egg and that of a child's head. Larger ones he regards as cases of cysto-fibroma. Förster reports, however, one case in which the tumor was as large as a man's head; and Scanzoni and Van Buren similar ones. Dr. Peaslee¹ records a case where a tumor of this kind of equal size was removed by me in 1864, but I cannot agree in his classification. It was, according to my view, a true cysto-fibroma. The following was the report of it published soon after its removal: "The tumor, when placed upon a table and palpated, was so deceptive in its apparent yielding of fluctuation, that it was even then declared to contain fluid which had not been reached by the trocar, and this view was entertained until it was bisected. It was found that it consisted of loose fibrous elements, forming numerous loculi, about the size of a hickory-nut, which were filled with a honey-like material. After section had allowed what was computed as about three pounds of this material to flow away, the tumor weighed a little more than fourteen pounds."

Within the last year, however, I have removed an unquestionable ovarian fibroid as large as the largest man's head.

If in one of the solid tumors just mentioned cysts develop themselves as essential parts of the growths, we give them the names of cysto-fibroma, cysto-sarcoma, or cysto-carcinoma.

Cysto-carcinoma.—The formation of fluid collections may occur with cancer of the ovary in three ways: 1st, cysts may develop in the structure of scirrhus and medullary cancers, as they do in that of sarcomata; 2d, a fluid or cystic tumor, primitively benign, may develop malignant material in its cyst-wall; 3d, a large medullary cancer may, by cell infiltration and disintegration at its centre, form within itself a mass of fluid. The condition may consist then in cancer complicating cystic degeneration or in cystic degeneration complicating cancer. According to Scanzoni, the cancerous mass may develop in the tissue of the cyst walls and project either internally or externally, or it may grow from the walls by pediculated or sessile tumors filled with medullary material, which are soft, tumefied, and very vascular. In the same tumor both colloid degeneration and medullary cancer may be met with.

¹ Op. cit., p. 26.

The ovarian limits do not always confine these fatal growths. At times they pass them, and affect the peritoneum or other neighboring parts. This tendency to eccentric development accounts for the protuberances, the size of the fist, so often serving as a means of diagnosis of ovarian cancer. The distinguishing characteristic of cystic cancer is its rapidity of development. In a few months it often reaches a size which sarcoma or even cystic degeneration would not attain for several years.

The frequency of these and other ovarian tumors may be judged of from reference to some statistics accumulated by Scanzoni, which have been already referred to:—

Number of cases examined	. . . . .	1823
“ ovarian tumors among them	. . . . .	97
“ cases submitted to autopsy	. . . . .	41
“ fluid tumors	. . . . .	25
“ colloid tumors	. . . . .	9
“ cysto-sarcomata	. . . . .	5
“ cystic cancers	. . . . .	2

From this it will be seen that the affection which we are now considering is rarer than sarcoma and very much rarer than colloid or alveolar degeneration.

Surgical treatment holds out little hope in these cases. According to my experience, ovariectomy performed upon patients thus affected almost invariably results fatally. Nevertheless, even as a forlorn hope, its propriety should be considered.

The prognosis in this disease is graver, and the limit of life shorter than in any other affection of the ovaries.

Cysto-fibroma or Cysto-sarcoma.—Between sarcoma and fibroma of the uterus a very broad distinction is now made by pathologists and clinicians, but at present these two terms are in reference to the ovaries used synonymously. That they have really been so for a long time in works upon gynecology, is evident from an examination with reference to the subject. Thus Scanzoni defines fibrous tumors of the ovaries to be “tumors formed of cellular tissue,” and cysto-sarcomata as “tumors composed of cellular tissue in the middle of which are formed more or less considerable cavities.” Peaslee refers to cysto-fibroma, and makes no mention of cysto-sarcoma, while Barnes and G. Braun treat of cysto-sarcoma without alluding to cysto-fibroma. It must be remembered that, even in reference to these affections in general, Rindfleisch¹ says, “I cannot separate the fibroma from the sarcoma; . . . we distinguish three principal varieties of sarcoma, namely: round-celled sarcoma, spindle-celled sarcoma, and fibroma.” “By cysto-sarcomata,” says Lücke,² “those large tumors are especially meant which consist of solid masses, papillary

¹ Patholog. Histol., Am. ed., pp. 132 and 142.

² Loc. cit.

proliferations, and numerous closed and open cavities, such as are found in the mammae, ovary, and testicle." In some cases the first step in disease is adenoma; then, this being affected by sarcoma, which undergoes cystic degeneration, the result is a combination to which Lücke gives the name adeno-cysto-sarcoma.

These cysts often grow to a very large size. In Mr. Wells's ninety-first case of ovariectomy the operation was preceded by tapping, which removed thirty-eight pints of thin, dark fluid containing much cholesterol. Dr. Fox, who examined the tumor, states that the cysts which were emptied by tapping represented one-half the bulk of the mass, which, even after this, weighed thirteen pounds. The structure of the solid portion of the tumor was very complex, the cysts being of every variety of size and grouped together in great confusion. In some the fluid was clear, and in others like pea soup. The proportion between the cystic and fibrous elements governs the character of these masses to such an extent that it is often difficult to classify them. When the former is much in the ascendency, the growth resembles a fluid tumor; when the latter predominates, it appears perfectly solid.

The contents of the cyst may be colloid, purulent, serous, or sanguinolent, and blood is sometimes effused between the fibrous interstices so as to cause a rapid increase in size. The cystic sarcoma sometimes attains very large, or, as Kiwisch expresses it, "colossal," dimensions.

In Mr. Wells's case just alluded to, the tumor filled the whole abdomen, and extended two inches above the ensiform cartilage by its upper margin, but its growth was not nearly so rapid as that of pure cystic disease. This case had lasted for seven or eight years, slowly increasing until 1863, when it developed at the following rate: June to July, one inch; July to August, one inch; August to September, one inch; September to October, half an inch; October to November, one inch.

Should one or more large cysts be detected, relief to many of the symptoms arising from mechanical interference may be obtained by tapping. The results of the operation are, however, more dangerous than in fluid tumors, hemorrhage and subsequent inflammation often taking place in consequence of it. Another disadvantage attending it is that the operator is more limited as to choice of the point to puncture. Besides this means our efforts at palliation must consist in relieving symptoms as they occur, in giving support to the mass by an abdominal bandage, and in enjoining quietude during menstrual epochs.

The only curative treatment with which we are acquainted that avails anything for this form of tumor is removal by ovariectomy. The operation is not so promising as in case of cystic degeneration, and should not be undertaken until the evil results of the disease and its tendency to destruction of life are fully manifested. It requires, generally, the long abdominal incision, and is very likely to be rendered difficult by adhesions; still

the prospect of success is such as to render the operation in many cases of grave prognosis not only admissible, but incumbent upon us.

Dermoid Cysts.—In various parts of the body, the orbit, the floor of the mouth, the brain, the eye, the anterior mediastinum, the lungs, the mesentery, the testicles, and the ovaries, a peculiar cyst containing fat, teeth, hair, cholesterine, cartilage, and bone is sometimes found. Its wall gives evidences of the existence of sweat glands, sebaceous follicles, papillæ, and an investing epithelium, so that the microscopic appearances of the wall resemble closely those of the skin. Many fanciful theories have been indulged in as to the origin of these peculiar growths. It is now generally believed that they are the result of an irregular and eccentric development of the tissues of the fœtus during intra-uterine life. It was Lebert who advanced the theory that from the elements present, spontaneous generation of a portion of skin occurs, and this being given, we have, as Dr. Farre expresses it, “the basis out of which many of those products spring.”

M. Pigné has analyzed eighteen cases with reference to the period of life at which they were found, with the following results:—

- 5 existed in virgins under twelve years;
- 6 “ children from six months to two years;
- 4 “ the female fœtus at term;
- 3 “ fetuses cast off at eighth month.

Dermoid tumors vary in size from that of a hen's egg to that of the adult head, but very rarely grow larger. They are hard and generally globular. One ovary is usually affected, and by only one tumor; but instances are on record where a single ovary contained a large number. They usually consist of fat, long hairs, teeth, skin, and traces of bone intermixed. The teeth are usually imbedded in the cyst wall or attached to pieces of bone, and are sometimes very numerous. Schnabel¹ records a case in which they exceeded one hundred in number, and Ploucquet² one in which they amounted to three hundred.

Histories of such cases are so rare that I transfer the following from Prof. Kiwisch's work: “A girl, seventeen years of age, was attacked with a swelling of the left ovary which, after twenty-one years, measured four ells in circumference, and reached below the knee. After her death, which took place in her thirty-eighth year, it was found that the sac alone of the ovary weighed fourteen pounds, and contained forty pounds of a thick, adipose, honey-like mass, which was mixed with many hairs of different lengths, among which curls were found two inches long, and as thick as a thumb, very like elf locks; the internal surface of the sac was set with short hairs. There were also found eight bony concretions of irregular shape, one of which was seven and another ten inches

¹ Kiwisch, *op. cit.*

² Becquerel, *op. cit.*

long, and about two inches broad; the form of one of these bones was polygonal, and set with six molar teeth and one incisor, and nine separate bones were present besides. The teeth had the size, perfectness, and firmness which they generally have in a girl twenty years of age."

Although in themselves innocuous, and not likely to increase rapidly or to attain any great development, they sometimes set up very serious and even fatal disturbance by one of three methods: by creating suppuration and abscess on account of the irritation kept up by a foreign mass; by perforation and discharge into the peritoneum; or by the cyst which contains the dermoid elements secreting fluid and changing its character to that of a fluid tumor. Out of one hundred and fifty ovarian tumors removed by me, four were large cysts having as bases dermoid tumors containing fat and hair, and in one case a small fragment of bone. In these cases the cysts containing the dermoid elements were not in communication with the large cysts filled with fluid colloid, which constituted the mass of the tumor. In two cases the tumor was nearly removed when a cyst filled with fluid, fat, etc., was opened into. The large cysts appeared exactly like ordinary multilocular cystoma.

Very often they are discovered by accident only. Physical exploration reveals a hard, round mass, painless upon touch, and, unless the size prevent it, perfectly movable. When of small size they require no special treatment, unless, as once happened in a case of Dr. Ramsbotham's, they obstruct parturition. When the cyst wall undergoes suppurative action and the mass points, it should be managed upon the same principles as a pelvic abscess. When a large cyst or cysts develop, they should be treated as the ordinary cystoma ovarii.

We have now reached the proper point for the consideration of the subject of ovarian cysts and cystomata, which calls, on account of its paramount importance, for the closest investigation on the part of the gynecologist. That it may receive this I leave its study for a separate chapter. Meantime, before leaving this part of our subject, it appears best to me to say a few words upon colloid degeneration of the ovary, an affection which at present holds in the minds of many a doubtful position as to malignancy. For a long time the generally accepted opinion with reference to colloid, *κόλλα*, "glue," and *εἶδος*, "like," or jelly-like tumors was that they were of cancerous nature, but both in their minute structure and in their clinical features they are so far removed from true malignant disease that the belief is becoming very prevalent that they are not necessarily of that character. This view is now adopted by Drs. Farre, G. Hewitt, Kiwisch, Collis,¹ Becquerel, and most of the more recent writers upon the subject. In speaking of ovarian colloid tumors, Hewitt remarks: "The latter designation (colloid cancer) is not a good one, for an attentive

¹ Op. cit., p. 205.

consideration of the facts leads to the conclusion that the affection is not cancer at all." M. Becquerel¹ seems to have placed the question in its proper light when he says, "Several diseases have been confounded under the indefinite name of colloid cysts; it is therefore essential, before advancing, to distinguish these different varieties. We shall now endeavor to do this after them (Virchow and Scanzoni), previously remarking that under the name of colloid matter some have not at all intended to signify a cancerous product, while others have assigned it such an origin." Virchow² strongly expresses himself upon this point. In speaking of the difference between the form and nature of growths, he says, "You may therefore say, colloid cancer, colloid sarcoma, colloid fibroma. Here colloid means nothing more than jelly-like." He then goes on to remark that no confusion should exist between such growths as colloid cancer and colloid degeneration of the thyroid gland as to pathological significance. His description of the so-called alveolar cancer is thus quoted by Becquerel: "Small pouches, which are filled with gelatinous matter and whose walls are lined by a layer of epithelium, are found in the parenchyma of the ovary. These vesicles develop in every direction, but more especially at the periphery of the ovaries, where they form masses of irregular shape. Some of them are isolated, while others are grouped together in the following manner. The walls of these vesicles disappear by atrophy of cellular tissue, when they are only formed by their epithelial lining. This becomes infiltrated with fat, and the walls forming the connection are easily ruptured. Those of the large cyst remain intact and become hypertrophied. . . . In other cases the vesicles rupture by over-distention; from this results hemorrhage, and blood is found in the vesicles." Kiwisch describes it as a breaking up of the stroma of the ovaries into cellular cavities, alveoli, closely aggregated together and inclosing a jelly-like, semifluid mass. By others it has been likened to a sponge or a honeycomb.

It is safe to conclude, from the present aspect of the subject, that, while colloid deposit may coexist in the ovary with true cancer, the peculiar breaking up of the stroma into alveoli which we have just described is not in itself a malignant affection, but one which seems to constitute a connecting link between cancer and the benign degenerations. It frequently complicates cancer, sarcoma, and fluid tumors. "We have observed," says Kiwisch, "alveolar degeneration of considerable extent remain in the system for a long series of years, without any remarkably bad effects."

Should a large cyst be discovered anywhere, and the size of the tumor require diminution on account of interference with surrounding parts, paracentesis may be practised; but in a pure alveolar tumor, such an accu-

¹ Op. cit., p. 226.

² Cellular Pathol., p. 512.

mulation is not common. Under these circumstances, if the disease steadily advance and the constitution suffer in consequence, we should be encouraged by recognition of its non-malignant nature to perform ovariectomy.

CHAPTER XLVIII.

OVARIAN CYSTS AND CYSTOMATA.

THIS disease consists in the development of cysts within the ovary without coincident growth of solid elements, such as fibroma or carcinoma. Of all the varieties of ovarian tumor it is the most commonly met with, and hence for the practitioner it is the most important. It is fortunately, too, that which above all others is most susceptible of relief by surgery.

Pathologists are still at variance with reference to the origin of ovarian cysts. While some with Wilson Fox¹ agree, that "all the forms of cysts met with in the ovary originated from the Graafian follicles, and that the multilocular forms are not the results of any special degeneration of the stroma;" others, like Wedl, doubt their follicular origin entirely; and others still, with Rindfleisch, admit two different sources of cystic formation—one, the follicles, the other, the interstices of the stroma.

"In many cases," says Rokitansky,² "they are undoubtedly formed from the Graafian follicles, and it appears that an inflammatory process is particularly liable to give the first impulse to this metamorphosis. They are probably, however, as often new formations from the beginning."

"It was formerly very generally supposed," says Wedl,³ "that the cysts in the parenchyma of the ovary originated in the Graafian follicles, but no direct proof of this was ever given."

Lücke,⁴ one of the latest and most reliable authorities, takes even stronger ground against it than Wedl did. After quoting Rokitansky's views he goes on to say: "But we have already stated that cysts can only form in the connective tissue, and only after a long continued irritation; and that it does not look at all probable that such cysts should form by spontaneous exudation. As far as the cystoids of the ovary are concerned, theory certainly is not admissible. These tumors are essentially cysts from broken down tissue."

While experimental pathologists are testing this question, we may for

¹ Med. Chirurg. Trans., 1864.

² Op. cit., p. 249.

³ Wedl's Path. Histol., p. 462.

⁴ Chapter on Tumors in Billroth and Pitha's Manual of General and Special Surgery.

the time assume that there are two entirely different pathological processes by which true ovarian cysts are generated :—

1st. The follicles of De Graaf become filled with a colloid material, due to abnormal secretion from their walls, and, according to Rokitansky and Rindfleisch,¹ probably the result of inflammatory disease of the wall of the follicle. This is not the insignificant hydrops folliculorum which creates small cysts, but a true colloid degeneration of the follicle of much more serious import.

2d. A development of cysts may occur in the stroma of the ovary without connection with the follicles. In this case, according to Wedl, "the cyst consists in an excessive augmentation of volume of the areolæ of the areolar tissue and of the papillary new formations composed of connective tissue." In this view Waldeyer coincides in his excellent treatise upon ovarian tumors.²

Lücke makes Rokitansky's view as to the mode of formation of these cysts in the stroma so clear that I use his words instead of quoting the original: "Cysts may also be generated by exudation into new formed connective tissue—the fluid distending the different bundles, and as they intersect in all directions, the globular form is the result; thus numerous small spaces communicate with each other, from their walls new cysts start, and thus very complex tumors can be formed." Rindfleisch³ accepts both of these sources of ovarian cystoma in the following words: "An exact investigation also proves that at least the majority of all ovarian cysts proceeds from Graafian follicles; while, upon the other hand, until further information, a different mode of origin must be accepted for a group of cysts, although not so large, yet, at the least, just as important."

The development of a substance resembling the glandular element of the ovaries, and constituting the nidus of cysts, has recently attracted considerable attention. In 1862 Mr. Spencer Wells proposed for this the name of "adenoma" or "adenoid tumor." Further investigations appear to have satisfied pathologists that a degree of adenoid development occurs in every true ovarian cystoma. Mr. Wells himself, in his recent work on Diseases of the Ovaries, considers under the head of adenoid tumors all simple, multiple, and proliferous cysts; and Delafield⁴ declares, that "in the ovaries most of the compound cysts are adenomata, with dilatation of the follicles." Klebs strongly advocates this view. As adenoma is then a frequent element of ovarian cystomata, it requires no separate and special consideration.

Until a recent period considerable attention has been paid to the character of ovarian cysts, based upon the existence of a few and of many cysts. Pathologists are beginning to lay less stress upon this feature than

¹ Op. cit., p. 515.

² Waldeyer, Eierstock und Ei., Leipzig, 1870.

³ Op. cit., p. 515.

⁴ Post-mortem Examinations and Morbid Anatomy.

they formerly did. Rindfleisch declares that all are multilocular in the beginning, and that they become paucilocular, and, even in rare cases, unilocular, by fusion of adjacent cysts by breaking down of dividing septa. It must be admitted, however, that there is one class of tumors, the distinguishing characteristic of which is the existence of a few cysts only, one or two of which are usually very large, and another which is specially marked by numerous small cysts. The first constitutes the oligocystic tumor of Peaslee; the latter the polycystic tumor; or, as they are likewise styled, paucilocular and multilocular.

Each class has usually certain well-marked features, the recognition of which is of value in a practical point of view. The first is thus described by Rindfleisch: "Multilocular tumors up to the size of a man's head, or unilocular cysts up to two feet in diameter, with smooth, but little adhering surface, and comparatively thick, fibrinous walls, which are very commonly covered at their inner side with cauliflower-like or more tuberos papillary excrescences." This is the form of tumor which he regards as due to colloid degeneration of the Graafian follicles.

The second variety he describes in these words: "At the place of one ovary (the other, as a rule, is healthy, while in the first form the disease is often of both sides) there lies a tumor, not infrequently far above the size of a man's head, which is composed of several large, and very many smaller, and even the smallest cysts. The larger cysts are often constricted, and exhibit, at these places, the remains of former partition walls in the form of fenestrated membranes, or ramified vascular strands, which evidently succumb to a gradual maceration. The surface of the tumor is probably always connected with the peritoneum by a large number of inflammatory adhesions, upon which larger venous vessels run to and fro. The walls of the cysts are comparatively thin, and easily torn." These tumors he regards as due to colloid degeneration of the stroma.

While the statement of Rindfleisch that no "fundamental significance" can be attributed to the unilocular or multilocular character of these tumors is correct from an anatomical point of view, it is not the less so that the practitioner is greatly aided in prognosis and treatment by a recognition of the difference between the two forms of tumors just described; and also of that which exists between them and another, which, being composed of both cystic and solid elements, receives the name of compound. We, therefore, proceed to consider the varieties of these growths in reference to the points mentioned, and to recapitulate succinctly what has been already said.

Ovarian cysts are characterized by three marked features: first, cysts with one or very few large compartments; second, cysts with a great many small compartments divided by thin cyst walls or thick trabeculae; and third, cysts which are composed of solid and fluid elements in varying

proportions. The first constitute the class styled the monocystic, unilocular, paucilocular, or oligocystic tumor; the second, that known as the multilocular or polycystic tumor; and the third that which is commonly styled the compound ovarian tumor. "All cystoids are multilocular at the commencement," says Rindfleisch, but unilocularization he declares is especially frequent in those tumors arising from colloid degeneration of the Graafian vesicles. A true monocyst is rare, though it may grow to the size of the uterus in the ninth month of pregnancy. Kiwisch¹ has met with one whose contents weighed over forty pounds. In the compound tumor, cysts having formed in the solid tissue, the presence of solid and fluid elements is detected by examination. These cysts result chiefly from softening of tissue, or, as it is expressed, by liquefaction. "As soon," says Billroth, "as the new formation has separated into sac and fluid contents, in some cases a secretion from the inner wall of the sac begins, so that the cyst from liquefaction becomes a secretion or exudation cyst and thus grows."

Dr. Noeggerath has been led to assume, by his microscopical investigations, that "the proliferating cystoma, or adenoma-cylindro-cellulare, the origin of which is at the present time generally associated with the formation of Pflüger's ducts, is to a large extent the result of a degeneration of ovarian bloodvessels.

These alterations consist—

- 1st. Of a hyaline degeneration of arteries and veins.
- 2d. Of a cell proliferation and secondary softening of the media of arteries.
- 3d. Of an endarteritis destruens.
- 4th. Of an alteration of all the elements constituting the large arterial sinuses, and secondary enlargement of the same.
- 5th. Of a metamorphosis of capillaries into epithelial tubes."

The walls of ovarian cysts consist of a covering of peritoneum, the proper tunic, tunica albuginea, of the ovary, and an epithelial layer. The peritoneum sometimes undergoes great hypertrophy, in rare cases being half an inch thick.

The size to which ovarian cysts will grow is truly wonderful. It has been already stated that unilocular or monocystic tumors are rarely seen of very great size, but instances are on record of multilocular tumors containing over one hundred pounds of fluid, and Dr. Copland, in the Dict. of Pract. Med. tells of an instance in which five hundred pints of fluid were drawn off by repeated tapings, in twelve months.

One or both of the ovaries may be affected, the right being that most frequently selected by the disease. The comparative frequency with

¹ Op. cit., p. 102.

which the right and left ovary are affected is shown by the following table:—

Authority.	No. of cases.	Right side affected.	Left side affected.	Both sides.
Safford Lee	93	50	35	8
Chéreau	215	109	78	28
Scanzoni	41	14	13	14

Contents of Ovarian Cysts.—This subject has been exhaustively investigated by Scherer and Eischwald.¹ By the latter it has been so minutely dealt with that little is left to be desired as to the chemistry of such fluids.

These contents vary very much, between a clear, albuminous, serous fluid and a thick, gelatinous material which will flow through no canula, and has to be manually removed. The specific gravity may be as low as 1007, though usually it is 1018 or 1020. The most important chemical constituent is an albuminate, termed colloid, which is usually more dense in polycystic than oligocystic tumors, and denser in small oligocysts than in the same after having assumed a large size. Tapping appears to increase the density of this fluid in oligocysts.

According to Eischwald, two chemical transformations go on in the fluids of cysts simultaneously. Colloid material changes into muco-peptone, while the albuminates transuding from the blood are converted into albumino-peptone. A species of digestion of the raw material goes on under the heat of the body, as Rindfleisch expresses it, and consequently the larger and older the tumor the more fluid are the contents likely to be. Eischwald found these fluids chemically to consist of the following elements:—

Of the mucous order—

Substance of colloid particles ;

Mucin ;

Colloid substance ;

Muco-peptone.

Of the albuminous order—

Albumen (and fibrin) ;

Paralbumen ;

Metalbumen ;

Albumino-peptone (and fibro-peptone).

As an example of the quantitative analysis, the following from one of Eischwald's cases will serve. 1000 parts contained—

Water	931.96
Organic substances	59.77
Débris	8.27
	<hr/>
	1000.00

¹ Würzburger Medizinische Zeitschrift, 1864.

The débris (8:27) contained—

Salts soluble in water	7.53
Potas. sulph.	0.08
“ chlor.	0.59
Sodæ nat.	6.29
“ phosph.	0.16
“ carb.	0.38
Loss	0.03
Salts insoluble in water	0.74
	<hr/>
	8.27

Test for Paralbumen.—Leave the fluid at rest in a cool place, filter or decant, and thus separate sediment from supernatant fluid. Pass a stream of carbonic acid gas through this fluid, and instantly a precipitate of fine flocculi of paralbumen will occur.

Test for Metalbumen.—Digest another part of this fluid with absolute alcohol for three days. Filter off the precipitate, and heat with distilled water. Filter again, and metalbumen may be precipitated by sulphate of magnesia. Paralbumen is precipitated from this fluid by a few drops of dilute acetic acid and redissolved by an excess.

To the naked eye the fluids of ovarian cysts present various appearances, as they are tinged with blood or pus from hemorrhage or suppuration of the cyst walls. The varieties generally met with are the following: a light colored fluid like barley water; a light brown fluid like infusion of linseed; a dark red, bloody looking fluid; a greenish-yellow, semi-solid gelatine; a purulent fluid of very offensive character closely resembling pea-soup in appearance; very rarely an intensely black fluid; and in dermoid cysts a grumous, gruel-like mass.

Does a true ovarian cyst large enough to call for surgical interference, that is to say, larger than the size of a child's head to which hydrops folliculorum sometimes attains, ever contain fluid free from albumen? This is evidently a question of a great deal of importance. Wells¹ and Barnes make three groups of ovarian fluid, the first of which they declare are devoid of fat and albumen. “Heat and nitric acid,” says the former, “will neither coagulate nor precipitate them.” W. L. Atlee relied upon absence of albumen as a sign that a cyst is not ovarian, and the following interesting case reported by J. L. Atlee² will show the estimation in which this point is held by him.

“I operated upon Mrs. M., aged over fifty years, in October, 1870. She had labored under abdominal enlargement from the presence of a fluid for several years, and had been tapped about twenty-seven times, filling rapidly after each operation. After the last two or three tapplings a small tumor remained in the right iliac and pelvic regions; but at no time could albu-

¹ Dis. of Ovaries, Am. ed., p. 92.

² Essay by Dr. Drysdale, Trans. Amer. Med. Asso.

men be detected in the fluid by the ordinary tests of heat and nitric acid; hence I diagnosed the case to be one of serous cyst attached to the broad ligament. The presence of the tumor, as large as a turkey's egg, in the right iliac region, an unusual thing in serous cysts, cast a doubt as to its true character; but the inability to detect albumen by the above tests decided me against the operation, and the patient was sent home. Under these circumstances, a portion of the fluid obtained from the last tapping was sent to Dr. Drysdale, who gave a very decided opinion that the fluid was from an ovarian cyst. Upon the strength of this opinion I told the friends of the patient that I would operate if she filled again.

"Accordingly, on the 14th of October, 1870, I removed a cyst weighing, with the contained fluid, fifteen pounds, and of an unusual character. The upper half of the cyst was very thin and of a serous nature. Below the umbilicus the cyst was much thicker, and, descending to the pelvis, proved to be the right ovary, having one large cyst filling the abdomen above, with an aggregation of very small cysts constituting the iliac and pelvic tumor.

"The peculiarity of this case consisted in the rupture, probably at an early period of the disease, and before I saw her, of the tunica propria, or albugineous coat of the ovary, leaving the peritoneal covering intact, and of sufficient strength to retain, not only the small portion of the ovarian secretion, but of the serum secreted by the peritoneal coat. This also accounted, in some measure, for the very rapid filling after each tapping."

The correctness of the explanation given by Dr. Atlee is open to doubt, but his reliance upon presence of albumen as a sign of ovarian cyst is fully shown. Peaslee¹ expresses himself in these words, "the fluid of an ovarian cystoma will probably always be found to contain albumen if it be limpid enough to flow through the fine tube of the exploring trocar." I can safely say that I have never met with a true ovarian fluid which did not contain albumen.

The solid elements of the fluid of ovarian cysts consist of the results of hemorrhage, and desquamation and fatty degeneration of epithelial structures. In them are found cholesterine, fat globules, blood corpuscles, and pigment cells.

Microscopical Appearance of Ovarian Fluids.—The thinner, serous fluids present in comparison with those of colloid character few cellular elements. In the latter, under a power of from 300 to 550 Felschwald² found such an amount of morphological elements that the fluid had to be diluted with water before it could be examined. He then found fatty elements of various size; round cells, some serrated; large, colloid cells; round cells similar to the pyoid bodies of Lebert, or the exudative corpuscles of Henle; globular aggregations varying in size; scales of horny epithelium; crystals of cholesterine; dark brown pigment; etc.

"On placing a drop of the fluid removed from an ovarian cyst under the microscope," says Drysdale,³ "we usually find a number of granular cells,

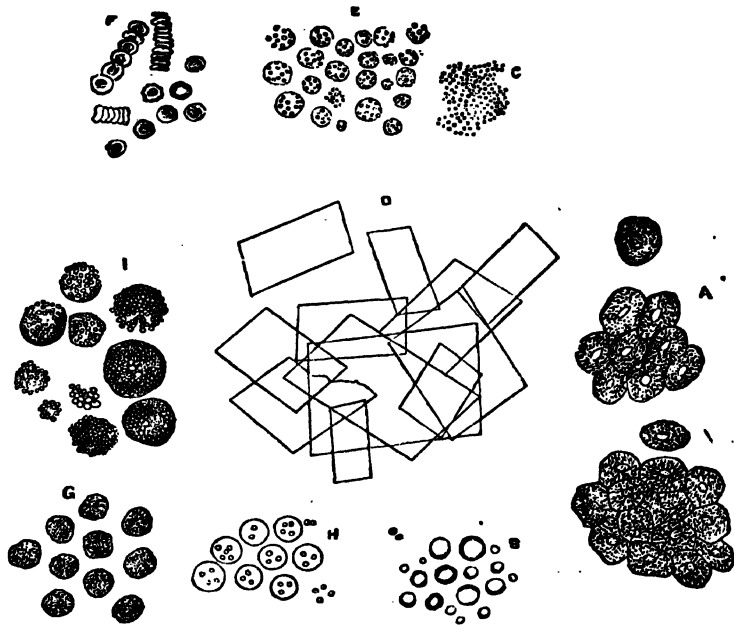
¹ Op. cit., p. 116.

² Op. cit.

³ Op. cit.

E, some free granular matter, C, and small oil globules, B; and frequently, in addition to these, epithelial cells of various forms, A, and crystals of cholesterine, D. These, together with blood-corpuscles, F, the inflammatory globules of Gluge, I, the pus cells, G H, and disintegrated blood and other cells, may all be sometimes seen floating in either a clear or a turbid fluid."

FIG. 252.



Microscopic appearance of ovarian fluid. (Drysdale.)

For the microscopist and pathologist all these are of interest. For the ovariologist this is the chief point of importance: is there any characteristic, pathognomonic cell or element upon the presence of which a positive diagnosis of ovarian cyst may be based? When this question can be unreservedly answered in the affirmative, a great advance will have been made in this important matter. Spiegelberg, in an interesting lecture upon the diagnosis of ovarian tumors, enumerates cylindrical epithelium, colloid cells, cholesterine, etc., and appears to rely upon the character of cells furnished by the part from which the material was secreted rather than upon any particular cell.

Long ago, Nunn pointed out the existence of the "gorged granule," though not as a diagnostic point, and Paget, Bennett, Gluge, and others speak of the "granular corpuscle," the "compound granular cell," and the "inflammation globules." In an essay, already referred to, Dr. T. M. Drysdale, of Philadelphia, has recently described a cell which he calls "the ovarian granular cell," which, when found in pelvic tumors, he

regards as pathognomonic of ovarian disease, and, as such, he looks upon its diagnostic value as very great. This matter is of so great importance, that I prefer to describe this cell in Dr. Drysdale's words. In referring to the cells shown in Fig. 252 he says:—

“To find them all present in one specimen, however, is rare; more commonly we can discover but three or four of them in the fluid. *But no matter what other cells may be present or absent, the cell which is almost invariably found in these fluids is the granular cell.*

“This granular cell, E, in ovarian fluid, is generally round, but sometimes a little oval in form, is very delicate, transparent, and contains a number of fine granules, but no nucleus. The granules have a clear, well-defined outline. These cells differ greatly in size, but the structure is always the same. They may be seen as small as the one five-thousandth of an inch in diameter, and from this to the one two-thousandth of an inch. In some instances I have found them much larger, but the size most commonly met with is about that of a pus cell.

“The addition of acetic acid causes the granules to become more distinct, while the cell becomes more transparent. When ether is added the granules become nearly transparent, but the appearance of the cell is not changed.

“This granular cell may be distinguished from the pus cell, lymph corpuscle, white blood cell, and other cells which resemble them, both by the appearance of the cell and by its behavior with acetic acid.

“The pus and other cells, G, which have just been named, have often a distinctly granular appearance; but the granules are not so clearly defined as in the granular cell found in ovarian disease, owing to the partial opacity of these cells; and when the granular cell of ovarian disease and the pus cell are placed together under the microscope, this difference is very apparent. In addition to the opacity of these cells, we frequently find their cell wall appearing wrinkled rather than granular; and further, in the fresh state, they are often seen to contain a body resembling a nucleus.

“But, if there is doubt as to the nature of the cell, the addition of acetic acid dispels it; for, if it is a pus cell, or any of the cells named above, it will, on adding this acid, be seen to increase in size, become very transparent, and nuclei, varying in number from one to four, will become visible. (See G, pus cell before adding acid; and H, pus cell after adding acid.) Should the cell, however, be an ovarian granular cell, the addition of this acid will merely increase its transparency and show the granules more distinctly.

“The compound granular cell, I, the granule cell of Paget and others, or inflammation corpuscle of Gluge, is also occasionally present in these fluids, and might possibly be mistaken for the ovarian granular cell; but it is not difficult to distinguish them from each other. Gluge's cell is usually much larger and more opaque than the ovarian cell, and has the appearance of an aggregation of minute oil globules, sometimes inclosed in a cell wall, and at others deficient in this respect. The granules are coarser, and vary in size, while the granules of the ovarian cell are more

uniform and very small. By comparing them in the drawing these differences will be apparent. Again, the behavior of these cells on the addition of ether will at once decide the question; for, while the ovarian cell remains nearly unaffected by it, or, at most, has its granules made paler, the cell of Gluge loses its granular appearance, and sometimes entirely disappears through the solution of its contents by the ether.

"That the discovery of a granular cell in ovarian fluid is new, I do not assert, as J. Hughes Bennett and other writers have described granular cells which they have seen in these fluids; but, with one exception, their description does not correspond with the *ovarian granular cell*. Bennett,¹ for instance, states that the granular cell which he saw exhibited a distinct nucleus on the addition of acetic acid, which is not the case with this. Other writers have described the cells which they found as pus and pyoid cells; and yet others confound them with the compound granular cell, or inflammation globules. The exception referred to above is found in Beale's description of the microscopic appearance of ovarian fluid."²

The description given by Beale he declares to correspond closely to that of his "*ovarian granular cell*, but it is incomplete, and no test is given by which to distinguish it from other granular cells." Dr. Drysdale, therefore, claims to have been the first to describe a cell which has never been accurately described before, and to have given the tests by which it may be distinguished from others, such as the pus cell, the white blood corpuscle, and the compound granule cell, which closely resembles it. He sums up in these words:—

"I claim, then, that a granular cell has been discovered by me in ovarian fluid, which differs in its behavior with acetic acid and ether from any other known granular cell found in the abdominal cavity, and which, by means of these reagents, can be readily recognized as the cell which has been described; and, further, that by the use of the microscope, assisted by these tests, we may distinguish the fluid removed from ovarian cysts from all other abdominal dropsical fluids."³

Microscopists are by no means agreed as to the validity of Drysdale's corpuscles as pathognomonic of ovarian cyst. Indeed I may say that, so far as my knowledge goes, a very general scepticism with regard to it prevails. Time will soon settle this matter, which as yet cannot be regarded as at rest, for the subject is now receiving the attention which it long ago deserved.

Causes.—Very little is positively known upon this subject. The predisposing causes which are generally admitted are the following:—

¹ Ed. Med. and Surg. Journ., vol. lxx. p. 280, 1846.

² The Microscope in its Application to Practical Medicine. By Lionel S. Beale, M.B., F.R.S., etc. 3d edit., p. 179.

³ The views of Dr. Drysdale are not yet verified. The matter is at present *sub judice*.

Age ;
 Childbearing ;
 Chlorosis ;
 Scrofulous diathesis ;
 Menstrual disorders ;
 Depreciation from poor living.

It should be borne in mind that even as to some of these there is doubt and variance of opinion among gynecologists.

The great predisposing cause is age, the affection commonly showing itself during the period of ovarian activity, and very generally during that of the most vigorous activity. It is rare under twenty and over fifty, the most common period of its occurrence being between twenty and forty. It may, however, occur in infancy, and as late as eighty. A case has recently been recorded in which ovariectomy was successfully performed upon a child of six years of age.¹

Scanzoni records 97 cases, 70 of which were from 18 to 40.

Chéreau " 230 " 133 " " 17 to 37.

Lee " 135 " 82 " " 20 to 40.

Of Scanzoni's cases five were between fifty-five and sixty; of Lee's one hundred and thirty-five cases, eighty-eight were married, thirty-seven unmarried, and eleven widows.

The much greater frequency of the disease among women who have become enfeebled by hard labor, poor diet, or depressing surroundings, than among those better circumstanced, must have struck every one of large experience.

The uncertainty existing as to the exciting causes is even greater than this. All those influences which theoretically would be likely to excite cystic growth, as ovaritis, blows, checking of menstruation, excess of coition, libidinous desires without gratification, have been advanced by authors as scientific certainties. But proof is wanting, however plausible the theoretical reasoning appears, and they cannot in the present state of science be admitted. In the great majority of cases these tumors develop in women who have led rational and quiet lives, in whom no prejudicial influence can be discovered as having existed, and who have detected the growth of the tumor when imagining themselves in very fair health.

Certainly nothing can with safety be assumed beyond this, that it is probable that those influences which keep up and intensify ovarian congestion, and interfere with rupture of the follicles of De Graaf, tend to produce cystic and follicular degeneration. Kiwisch, Rokitansky, and Rindfleisch all agree in thinking it probable that inflammation affecting the walls of the vesicles has an influence on the production of the disease.

¹ Med. Press and Circular, March 26, 1873.

Natural History of Ovarian Cysts.—Ovarian cystic tumors develop either by one or by a number of cysts. In the first case the cyst may become fully distended by fluid, reach a point where its growth ceases and remain quiescent, only annoying the patient by the mechanical results of its presence and the apprehension that it may increase and create trouble. There are no grounds for doubting the evidence that such tumors may remain without increase for even forty or fifty years, but such cases are rare exceptions to a general rule. "Much mischief has resulted, however," says Hewitt, "from looking on such cases as the typical ones, while the large majority of the cases, the end of which is naturally death in a much shorter time, have been considered as the exceptional ones."

We now and then meet with pulmonary tuberculosis which goes on to formation of a large cavity, and then for some unaccountable reason ceases to advance. The cavity, which is distinctly discernible, remains quiescent, and the patient may live for years. As this is an exception to a rule in the natural history of phthisis, so is the tardy course of ovarian dropsy just alluded to an exception to the usual course of that affection. The oligocystic tumor grows much more slowly than the polycystic, and this is the more marked as it approaches the monocystic type. I removed one which had been under my own observation for nine years, and only at the end of this time did its existence affect the constitution.

If its type be multilocular, the tumor advances more rapidly, certainly, and uncontrollably, than in the case just mentioned. The prognosis of ovarian dropsy not interfered with by art, and by this we mean surgical art, as medicine has no controlling or curative power in the disease, is always unfavorable. The average duration of the cases of both types is supposed by the best modern authorities to be about three years of life after the inception of the affection.

Mr. Safford Lee has collected statistics as to the duration of the disease in 123 cases, not subjected to any curative surgical treatment.

In 38	the duration was	.	.	.	.	.	.	1 year.
" 25	"	"	"	.	.	.	.	2 years.
" 17	"	"	"	.	.	.	.	3 "
" 10	"	"	"	.	.	.	.	4 "
" 4	"	"	"	.	.	.	.	5 "
" 5	"	"	"	.	.	.	.	6 "
" 4	"	"	"	.	.	.	.	7 "
" 3	"	"	"	.	.	.	.	8 "
" 17	"	"	"	.	.	.	.	9 to 50 "

From this it will be seen that out of 123 cases 80 terminated within three, and 94 within five years. At the same time that the fact must not be lost sight of that 17 out of 123 cases lasted over nine years, and that some, the number of which is not stated, terminated at the end of fifty, it must not be accepted as certain that these were cases of true ovarian

cystoma. Experience in this affection leads to the suspicion that these were instances of dermoid cysts, or of some variety of abdominal tumor which, while it closely simulates ovarian cystoma, runs a much more benign course.

I have removed an undoubted multilocular ovarian cyst which had lasted, the evidence in favor of duration being medical and perfectly reliable, for twenty-three years; another for twelve and a half years; another for ten, and another for nine years.

Spontaneous Cures of Ovarian Cysts.—Sometimes nature effects a cure in one of the following ways. The cyst may discharge into the peritoneum, and absorption occur. Of this accident Dr. Tilt has collected 71 cases, of which 30 recovered, 19 were improved, and 21 died. I have met with four instances of such rupture, two of which proved fatal by peritonitis. The cyst walls may undergo calcareous degeneration, which checks advance. The cyst may discharge externally by the abdominal or dorsal surfaces, or into the rectum, bladder, vagina, or uterus by means of the Fallopian tubes. Instances of the last occurrence are mentioned by Morgagni, Frank, Follin, and Boivin, and Richard records five cases.

With reference to nature's power alone, or aided by absorbents, to remove the accumulated fluid, Kiwisch declares, "We must express our dissent from the opinion of those practitioners who assume that an ovarian cyst can be completely removed by simple absorption. So far as we know, this process has not been satisfactorily demonstrated by a single case." It is the opinion of many that absorption of the contents of these cysts does occur, and numerous instances are cited in proof; but, in these cases, the doubt arises whether a true cystoma ovarii existed, or one of the periuterine cysts which so closely resemble it.

Diseased Conditions affecting Ovarian Cysts.—I have already alluded to suppurative inflammation of the cyst walls, which may occur in consequence of tapping, or without operative interference. The pulse and temperature become elevated, the patient restless and depressed, profuse perspirations occur, diarrhœa sets in, and, unless relieved, the patient dies with hectic symptoms. In a number of instances ovariectomy has been successfully performed under these circumstances. One such case is recorded by Keith, the suppurative action occurring seven days after tapping; three by Wells; one by Peaslee; and one by Teale.¹ I have several times operated upon cases in which ovariectomy was undertaken only as a last resort, where the contents of the cysts were excessively fetid, and the patient very ill at the time of the operation, and which have nevertheless done well.

Twisting of the pedicle is another accident which sometimes takes place. Gallez,² in referring to this, says, "This very curious and happy

¹ London Lancet, Am. reprint, Sept. 1873.

² L. Gallez, Histoire des Kystes de l'Ovaire, Bruxelles, 1873, p. 150.

termination of ovarian cysts is unfortunately very rare, and likewise very difficult of artificial accomplishment; its effect is to produce strangulation of the tumor." Where the interference thus established in the vascular supply of the tumor goes just far enough to produce gradual atrophy, cure may be effected, and post-mortem evidence of such an occasional occurrence exists. Ordinarily strangulation and death of the tumor occur, which destroy life unless ovariectomy should intervene. In 1865 Rokitsansky published an essay upon this subject, and since that time it has attracted considerable attention. He cited the details of thirteen cases, and Spencer Wells mentions two deaths thus caused before operation, and twelve cases discovered by him upon performance of ovariectomy. Klob reports an instance in which a tumor turned upon its pedicle five times; and in a case of fatal hemorrhage into the cyst Patruban found in autopsy torsion of the pedicle creating venous stenosis and rupture.¹ Crane² and Tait³ record cases in which small cysts were thus rendered gangrenous, in consequence of which the patients died of septicæmia.

Sometimes an ovarian cyst increases very suddenly in dimensions, great pain from distention occurs, and symptoms of loss of blood develop themselves. This is due to hemorrhage from the cyst wall. In two cases in my experience it has occurred; in one ovariectomy demonstrated the source of the difficulty; and in the other aspiration, adopted on account of the severe suffering from distention, did so. Parry⁴ records a case which almost proved fatal from this cause, and Patruban⁵ one which did so. In the latter case torsion of the pedicle seemed to have produced the rupture of vessels. Wonder at such an occurrence will cease when it is remembered that veins⁶ as large as the little finger have been found between the outer and middle layer of cysts.

Conditions likely to complicate Ovarian Cysts.—They may be complicated by pregnancy; ascites; fecal impaction; Bright's disease; pleuritic effusion; peritonitis with adhesions; a low type of gastritis marked by intensely red tongue, constant vomiting, and tenderness of the stomach; a low grade of septicæmia; diarrhœa; inguinal, umbilical, and crural hernia, etc.

Methods in which Death is produced.—There are several modes in which ovarian dropsy produces its usual fatal results when uninterfered with by surgical means.

1st. A cyst may rupture and produce peritonitis, either before or after suppurative inflammation of its walls.

2d. Inflammation of the cyst wall may result in the filling of the cyst with pus, which produces hectic and in time exhaustion and death.

¹ London Lancet, Am. reprint, Sept. 1873.

² Amer. Med. Monthly, April, 1861.

³ Am. Journ. Obstet., Nov. 1871.

⁴ T. S. Lee.

⁵ Edin. Med. Journal, 1861.

⁶ Gallez, op. cit., p. 150.

3d. Fatal hemorrhage may occur into the cyst.

4th. Prolonged interference with the functions of nutrition and respiration may sap the powers of life.

5th. Death of the cyst may occur from twisting or rupture of the pedicle and cause septicæmia.

6th. A low grade of gastritis, pleuritis,¹ or enteritis may produce exhaustion.

7th. Finally, from the combined depreciating influences of this condition, gradual or sudden prostration of strength may close the scene by death.

Every one having charge of a case of ovarian tumor should recollect that often the only hope of saving life, threatened by the accidents here recorded, consists in an immediate resort to ovariectomy. Even acute peritonitis has been thus cut short, and patients with a temperature of 105° from suppuration of the sac have been saved. Spencer Wells arrived just too late to save two cases in which death resulted from hemorrhage into the sac, and Wiltshire in time to save one, and I operated with a successful result in a patient nearly completely collapsed from sudden rupture of a large cyst.

We now approach the important subject of symptomatology of ovarian cysts and their differentiation from other morbid conditions met with in the abdomen. As the study of that subject will frequently involve allusion to pelvic cysts closely resembling ovarian but yet entirely distinct from the ovaries, I deem it best to take a rapid survey of them here.

Cysts of the Broad Ligaments.—Cysts of considerable size sometimes form between the layers of peritoneum making up the envelopes of the broad ligaments. They are supposed to arise from the collection of fluid in the meshes of areolar tissue of the ligaments, or from the parovaria or bodies of Rosenmüller. Within the external margin of the broad ligament, where the two walls of the peritoneum pass from the fimbriæ of the tube to the ovary, exists the body of Rosenmüller, parovarium, or Wolffian body, to which allusion has already been made as consisting of a number of little, tortuous cords, some of which are perforated by canals. The slight secretion occurring from the walls of these tubes sometimes becomes greatly increased, and the containing walls becoming proportionately distended, a tumor is created. These cysts may attain a large size, though they do not generally do so.

One of the most interesting cases of cyst of the broad ligament which I have seen in practice was in a lady from Mobile, upon whom ovariectomy was successfully performed by the late Dr. Nott, of this city. He had tapped her, and drawn off a large amount of limpid fluid four years before

¹ I have seen two cases in which hydrothorax proved a great source of prostration.

the operation, and the cyst had for about three years appeared to have closed. After that time, however, it had refilled, and was, when I first saw her in consultation with Dr. Nott, quite tense, and the abdomen appeared of about the size of that of a woman in the seventh month of pregnancy. Operation was determined upon, but delayed for three months in consequence of the heat of the weather. When it was performed, both ovaries were found to be perfect in size and shape, and the cyst¹ was found to occupy the left broad ligament, the peritoneal walls of which were immensely distended over its surface.

The peculiar features which have been found to characterize cysts of the broad ligaments are the following: They contain a clear, limpid, very slightly albuminous liquid, which takes on a purplish tinge when exposed to the rays of the sun; tapping generally, though not always, cures them; after tapping no cyst can be felt; they are always unilocular; and they have been found to contain in their walls nonstriated muscular fibre, which the walls of ovarian cysts never contain.

Parasitic or Hydatid Cysts.—Although cases of these cysts, developed in consequence of the presence of the *echinococcus hominis* and *cysticercus cellulosæ*, are reported as having occurred in the ovaries, it is doubtful whether such reports are authentic. These parasites may, however, develop in the mesentery, the omentum majus, and even in the cellular tissue; the vesicle of which the parasite consists becoming surrounded by a neoplastic sac. "I have seen," says Billroth, "cysticercus vesicles removed from the tongue and nose, echinococcus vesicles removed from the back and thigh." Spiegelberg reports a case of retro-uterine, left sided parasitic cyst, simulating ovarian cyst, in which he cut down and removed some of the characteristic contents. This procedure and tapping or aspiration are the only means of diagnosis which are at all reliable.

Tubal Dropsy.—This condition, which is described under the names of hydrops tubæ, salpingian dropsy, and hydrosalpinx, consists in the distention of the Fallopian tubes by muco-serous fluid.—It arises in this manner: some influence, for example, acute or chronic salpingitis, pelvic peritonitis, or cellulitis, occludes both extremities of the tube. The inflammation of the mucous membrane of the tube creating a muco-serous fluid, the canal is distended by this, generally irregularly, to the size of the finger or small intestine. Thus far the affection does not concern our present investigation, for there is no probability that such a growth would resemble ovarian tumor so closely as to lead to an error in diagnosis. But as this distention goes on, the mucous lining of the tube takes on the anatomical and physiological characters of a serous membrane, and secretes plentifully a serous, straw-colored, and slightly flocculent fluid. At times the distention of

¹ This cyst is now in my possession. Dried and stuffed with cotton, it measures 26 inches in circumference.

the walls of the tube proceeds* so far that the fluctuating tumor which results gives all the physical signs of ovarian dropsy.

The testimony of authorities is almost unanimous that between this condition and ovarian dropsy there are no means of diagnosis without withdrawal of some of the fluid. M. Aran sounds the key-note to the general belief when he declares that,¹ "the tube distended by liquid, I am perfectly assured, does not give a sufficiently clear sensation to allow us to diagnosticate its existence." Prof. Simpson, however, assumes a different position.² He declares that, although "in practice this form of tumor is usually altogether overlooked or is mistaken for some other kind of tumor," it is really diagnosticable by the following means: "1st, its free and independent mobility; 2d, its elongated form; and 3d, its wavy outline." Let any one examine the shape of a large tubal dropsy, like that represented at Fig. 253, for instance, and he will see that both the shape and wavy

FIG. 253.



Tubal dropsy. (Hooper.)

outline will fail him. When it is remembered that the affection frequently results from pelvic peritonitis, it will be apparent that the freedom of motion will be often delusive. "The diseased tube," says Courty,³ "is rarely free and without alteration at its periphery: generally it bears signs of old inflammation, which is adhesive, and this fixes it to the neighboring parts." I have met with the affection four or five times in autopsies, and this statement has always been sustained.

The means of diagnosis just mentioned would be applicable to slight tubal distention, which is rarely productive of symptoms calling for examination. Few instances of diagnosis are on record, and even in cases where tapping has been supposed to substantiate it, it is by no means sure that such a disease existed. Prof. Simpson reports but one case in his extensive experience in which he was able to come to a conclusion. He denies the possibility of great enlargement of these tumors, declaring that they rarely grow larger than a foetal head, and that we may justly be allowed to be sceptical as to cases reported as being much larger. Dr.

¹ Op. cit., p. 633.² Op. cit., p. 432.³ Op. cit., p. 987.

Arthur Farre,¹ however, willingly admits the well-known cases of Bonnet and De Haen; the first of which contained thirteen pounds of fluid and the second thirty-two pounds. Scanzoni circumstantially reports an instance in which the sac attained the size of the head of a child of ten years of age.

Subperitoneal Cysts.—Cystic degeneration is much more likely to occur in those organs which have, as component parts of their structure, minute cavities lined by epithelium. Thus, the kidneys and ovaries are peculiarly liable to be affected in this way. Cysts thus formed have been styled by Virchow cysts by retention. But cystic degeneration is by no means limited to such structures. It may occur in areolar tissue anywhere, and those organs which, like the thyroid and mammary glands, are prone to production of new growths having areolar tissue as their basis, are likewise especially liable to it.

It is believed by pathologists that under these circumstances the cyst is merely an expansion of the areolæ of the areolar tissue. In various parts of the abdominal cavity such cysts are found under the peritoneum and classed under the head of subperitoneal cysts. Mr. Safford Lee reports one case of a tumor which filled the abdomen, and destroyed life, after having lasted for twenty-five years. On post-mortem inspection a large cyst was found behind the peritoneum, which had originated under the pancreas. He reports another which began on the right side of the abdomen, was tapped forty-eight times, and was found by autopsy to be omental.

Cysts connected with the Spinal Cord.—In November, 1870, a woman aged 36 years entered the Woman's Hospital in this city, and came under the care of Dr. Emmet.² He found a large cyst filling the hollow of the sacrum and there firmly fixed. To aid in diagnosis, an ounce of fluid was drawn off by aspiration. This was clear and limpid, free from albumen, and revealed under the microscope only a few oil globules. The patient died, and Dr. F. Delafield on making an autopsy found a cyst, which contained some three quarts of fluid, filling completely the pelvic cavity and extending up to a level with the second lumbar vertebra. This communicated with the spinal cord by a funnel-shaped passage, which had as its lower outlet an oval opening extending from the upper margin of the second sacral foramen on the right to the position of the coccyx, which was wanting. Over the surface of the sac was a network of nerve tissue, extending posteriorly and to the right side. The sac was supposed to be one of spina bifida or hydrorachis.

Symptoms.—During the earlier periods of the development of ovarian cysts, very few symptoms ordinarily show themselves. As enlargement

¹ Supplement Cyc. Anat. and Phys., p. 619.

² This case is described in the Amer. Journal of Obstetrics, Feb. 1871.

goes on the patient becomes struck by the fact that her abdomen has increased in size, and, if both ovaries be affected, menstruation sometimes ceases, and she may imagine she has become pregnant. Pressure of the small but increasing tumor will sometimes create dragging sensations about the pelvis, irritability of the bladder, and, if the growth occupy the retro-uterine space, as it often does, pain in the back. This is, however, by no means all the inconvenience which may be experienced. A small, movable cyst, which may be pushed about in the abdomen, will sometimes cause severe pain. In one such case which I saw with Dr. Noeggerath, the account of which is published in Dr. Atlee's work on the Ovaries, ovariectomy was necessitated, when the cyst was no larger than a cocoanut, by excessive pain.

As the tumor grows and fills the abdomen, rising above the navel, a sense of distention is complained of, dyspnoea begins to show itself upon exertion, the patient feels more feeble than usual, and slight emaciation is observed. As it increases and begins to press upon the large viscera beneath the diaphragm, these symptoms increase, and the patient's face wears a peculiar expression, which has been styled by Mr. Wells, the "*facies ovariana*." This is created by an absorption of adipose tissue, an exaggeration of the natural furrows of the face, and an expression of anxiety and apprehension. To one who has studied this expression, an imperfect description such as this will recall it; but to one who has not become clinically familiar with it, it is impossible to convey a clear conception of it. To these symptoms the mammary and gastric symptoms of pregnancy sometimes, though rarely, add themselves.

Pressure upon the kidneys creates congestion of these organs, and scanty secretion is a common result. Occasional attacks of localized peritonitis are by no means rare, and hence, in many cases, ascites becomes a complication of the affection.

As the decadence of strength, the emaciation, and the impoverishment of the blood incident to this grave disorder increase with time, digestive and intestinal disorders show themselves, œdema of the feet and legs occurs, great feebleness appears, and the patient dies from progressive exhaustion.

A summary of the rational signs which may arise in consequence of ovarian cysts from the commencement of their growth to full development may thus be given; irritability of the bladder, dysmenorrhœa, constipation, hemorrhoids, pelvic pains of neuralgic character, symptoms of pregnancy, scanty urinary secretion, intestinal and digestive disorder, deranged respiratory function, peculiar facies, emaciation, œdema, venous distention on surface, ascites, vomiting, diarrhœa, cardiac irregularity, aphthous stomatitis, and hectic. In cases advanced in the last stage, all the last of these may show themselves, and in early cases, all the first mentioned;

but, in many instances, some of the most prominent of these signs are entirely wanting.

Physical Signs.—The symptoms thus far enumerated are never sufficient for diagnosis. They are usually only sufficient to suggest physical examination, by which reliable signs will probably be discovered, and the diagnosis be made complete.

The physical signs of ovarian cysts are, therefore, of the greatest importance, and the full capacity of physical exploration should in every case be developed, for to it we must look for answers to the following questions:—

1st. Does a tumor exist?

2d. If so, is it ovarian?

Does a tumor exist?—To decide this question, the patient should be placed upon her back upon a flat, resisting surface, the abdomen uncovered, all constriction removed from the waist, and the knees drawn up so as to relax the abdominal muscles. It is of primary importance that she should be calm, and give herself up to the examination in the full desire of aiding the physician in arriving at a diagnosis. In some cases the patient, from nervousness, in some from pain created by pressure, and in others from a desire to mislead and deceive, will not be able or willing to do this, but, by suddenly contracting the abdominal walls, will place a serious, perhaps insurmountable, obstacle in his way. Under such circumstances ether should be employed as an anæsthetic, and full investigation made. The abdominal muscles being entirely relaxed, careful palpation and deep, steady, and prolonged pressure should be made by both hands over the whole abdomen, downwards towards the spine, and especially over the pelvic region. By this means a more or less resisting mass may be discovered, which produces an abdominal enlargement visible upon inspection.

Thus far very little has been learned; merely that an abnormal enlargement exists in the abdomen. It may not deserve the significant name of tumor, but be due to one of these states:—

1st. Abnormal thickness of abdominal walls;

2d. Tonic spasm of abdominal muscles;

3d. Intestinal distention;

4th. Distention of urinary bladder;

5th. Pregnancy.

With care and caution each of these conditions may usually be eliminated by means which we shall soon consider. A neglect of such means has often resulted in great and needless alarm to patients, and a painfully humiliating and often ludicrous exposure of the practitioner.

It having been now decided that the patient has an abdominal tumor, or, in other words, an abdominal swelling due to a morbid cause of serious nature, it next becomes important to decide whether it be ovarian or not.

Is the tumor ovarian?—It has been already stated that any abdominal tumor may, unless careful means of differentiation are adopted, be confounded with ovarian growths. The truth of this will be appreciated by reference to the valuable tables of Dr. John Clay, the translator of Kiwisch on the Ovaries. He has collected twenty-three cases of attempted ovariectomy in which the operation was abandoned because the tumor proved not to be ovarian. The tumors were of the following characters:—

- 12 were uterine ;
- 2 “ omental ;
- 2 “ results of chronic peritonitis ;
- 2 “ not discoverable ;
- 1 was tubal pregnancy ;
- 1 “ obesity ;
- 1 “ mesenteric ;
- 1 “ splenic ;
- 1 “ not stated.

So great did the difficulties of diagnosis for a long time prove, that they were urged by the opponents of the operation as a valid objection to it as a surgical procedure. At the same time that they are still acknowledged, and that it is admitted that the most cautious and skilful diagnostician may be defeated by them, it can be confidently asserted that every year's experience greatly diminishes them, and that with the improved means now at command, an experienced examiner will rarely be misled. Let me, however, again insist upon the fact that immunity from oft repeated errors can be obtained, even by such an one, only by strict adherence to a conscientious and exhaustive examination of every case, a resort to all the known means of diagnosis, and a methodical exclusion of all conditions calculated to mislead.

It is a fact which I daily see demonstrated that an inexperienced diagnostician usually arrives at a conclusion by the application of a much smaller number of tests than a veteran examiner would dare to do. The latter has been so often deceived that he knows his weakness; the former has yet to learn.

The means of physical exploration which are at our disposal are the following :—

- Inspection and manipulation ;
- Mensuration ;
- Palpation ;
- Percussion ;
- Ausculation ;
- Vaginal touch ;
- Rectal touch ;
- The uterine sound ;
- Aspiration or paracentesis ;

Chemical and microscopical examination of fluids of the tumor ;
Explorative incision.

Solid ovarian tumors are rare and seldom assume very large proportions, and although ovariectomy is sometimes demanded for their removal, the operation is specially adapted to cystic tumors. We therefore pass to the more careful consideration of the diagnosis of these, and their differentiation from other abdominal enlargements.

An ovarian cyst usually develops markedly on one side of the abdomen, and if multilocular the abdominal distention is not symmetrical even in advanced periods. As it increases, the cyst pushes the intestines aside into the hypochondriac regions. The ascending and transverse colon alone approximate their normal positions, and the omentum majus is usually pushed up over the front of the tumor. While the cyst is in the pelvis, the uterus usually lies in front of it, but as increase of growth occurs it is ordinarily pushed behind it. There are, however, exceptions to both these statements. In rare cases, fortunately for the ovariectomist, a portion of intestine runs across the face of the tumor, being fixed there by adhesion. The uterus, even late in the development of a large cyst, may be found in front of it or latero-flexed, latero-verted, or even drawn completely above the pelvic brim. Curious as it may appear, great diversity of statement exists concerning the relation of cyst and uterus among writers on this subject. "Simpson's remark," says Peaslee,¹ "that, 'if the sound show a tumor in front of the uterus, the disease is certainly not ovarian,' is incorrect. The uterus is in front of an ovarian tumor only in exceptional cases ; but is often so in cases of uterine fibroma and fibro-cyst. Boinet mentions the fact as a remarkable one that Cruveilhier found the uterus behind an ovarian cyst in three instances." My observation certainly agrees with that of Dr. Atlee,² that "the uterus may be dragged up, or tilted up out of the pelvic cavity by the tumor ; or, through these influences, it may be found on either side, or displaced forward or backward within the pelvis. It may also be crowded downward against the perineum, or entirely extruded through the vulvar orifice. So that there is no general rule as regards the position of the uterus in ovarian tumors."

When the tumor has ascended above the umbilicus, as the patient lies upon the back, the abdomen will appear rotund, a decided protuberance existing, and very little flattening out by sagging of fluid to the flanks occurring. As the hands are laid upon the surface, and manipulation is practised, a firm, dense mass will be felt, which yields fluctuation, not usually of a superficial character like ascites, but less superficial and perceptible. Percussion will yield dullness all over the surface of the tumor and in one flank, but in the other resonance will generally exist. The surface of the tumor will often feel irregular and lobulated, and in multi-

¹ Op. cit., p. 115.

² Op. cit., p. 46.

locular tumors be more voluminous on one side than the other. If pressure be made upon the tumor, as the patient lies upon the back, it will resist like a full sac, and not yield, and the pulsations of the aorta may be felt obscurely through it. By vaginal and rectal touch the lower surface of the tumor may be felt and obscure fluctuation elicited.

Mensuration practised from the umbilicus to the sternum, and the umbilicus to the anterior superior spinous processes of the ileum, will generally show a marked difference between the two sides in polycysts and less difference in monocysts. In ascites the two sides are symmetrical. Auscultation serves to exclude pregnancy. By vaginal touch the position of the uterus as well as its mobility is ascertained, and when combined with conjoined manipulation the solid or cystic character of a small or even a large tumor may be determined by it. Should the tumor be found low in the pelvis in the later periods of growth, it is probable that a short pedicle exists, and also probably adhesions. Should it have risen out of the pelvis the pedicle is probably, but by no means certainly, a long one.

The uterine sound informs us as to the capacity, the mobility, and the sensitiveness of the uterus, as well as, to a limited degree, its relations to the tumor.

Simon's method of rectal exploration, modified by the introduction of the hand without the thumb into the bowel, constitutes one of the most valuable means of diagnosis and differentiation at our command. By it the point of origin of the tumor, as well as its general characters, may be very accurately ascertained.

Emptying the cysts of the tumor of fluid by aspiration or tapping is likewise a most useful means of gaining information; and of great moment is the careful and intelligent examination of the fluids removed.

Of late it has been proposed to determine as to the nature of such fluid by the discovery in it of "lutéine," a yellow substance found in the blood, the egg, and the fluid contents of ovarian tumors. As yet, this test has been too little investigated to enable us to decide what weight is to be given to it.

Lastly, we reach the crucial test of explorative incision, the value of which cannot be exaggerated, but which is attended by considerable danger.

These are the means by which the positive signs of ovarian cystoma may be elicited, but, before a diagnosis is arrived at by deductions based upon them, many other abdominal enlargements must be carefully considered and excluded. If this be necessary merely in arriving at a correct diagnosis where no operation is to be practised, how much more so is it in view of the grave procedure of ovariectomy. Any one of the following conditions may mislead the investigator, and each of them must be in turn considered by him who desires to do his full duty to his patient and himself.

Abnormal thickness or tension of abdominal walls	<ul style="list-style-type: none"> Obesity; Edema; Elephantiasis; Tonic spasm. Tympanites; Fecal tumor; Dilatation of stomach;¹
Distention of abdominal viscera	<ul style="list-style-type: none"> Distended bladder; Hematometra; Physometra; Cystic chorion; Hydrosalpinx.
Fluid accumulation within the peritoneum	<ul style="list-style-type: none"> Ascites; Encysted dropsy; Hematocele; Colloid accumulation.
Cystic disease of other parts in the abdomen	<ul style="list-style-type: none"> Cyst of broad ligament; Renal cyst; Splenic cyst; Hepatic cyst; Parasitic cyst; Subperitoneal cyst; Uterine cyst; Uterine cysto-fibroma.
Excessive development or displacement of other viscera of the abdomen	<ul style="list-style-type: none"> Uterine fibroma; Enlarged spleen; Enlarged liver; Fibro-plastic tumor of peritoneum; Sarcoma of abdominal glands; Malignant disease; Omental tumor; Displaced kidney; Displaced liver.
Pregnancy	<ul style="list-style-type: none"> Normal; Extra-uterine <ul style="list-style-type: none"> Ventral; Tubal; Interstitial; With amniotic dropsy; With ovarian dropsy; With dead child.
Diseased states of pelvic walls and areolar tissue	<ul style="list-style-type: none"> Enchondroma; Encephaloid of bones; Pelvic abscess.

¹ A most remarkable and interesting instance of this is recorded by Dr. Reeves Jackson, of Chicago.

Abnormal Thickness or Tension of Abdominal Walls.—Obesity will be recognized by obscure resonance on percussion over the whole abdomen; by absence of a defined, resisting outline to the supposed tumor; by the possibility of catching the fatty walls between the two hands, lifting them, and rolling them over the muscular floor beneath; by the deep depression which can be made when the patient is anæsthetized; and by the pendulous folds created by assumption of the sitting posture. It would be inexcusable in an expert to mistake this condition for ovarian tumor, but for an inexperienced examiner not at all so. I see numerous cases every year in which such an error is committed by very competent practitioners.

Œdema will be known by pitting upon pressure; by the existence of the same condition in the areolar tissue of the feet or face; and by its generally attending uræmia, chlorosis, or cardiac disease.

Elephantiasis, of which Dr. Atlee records a remarkable case, would be recognized by the peculiar structural alterations of the skin which characterize it.

Tonic spasm of the abdominal muscles has more than once led, as has indeed obesity, to abdominal section for removal of a tumor. It often occurs under the name of "phantom tumor" in very hysterical women, and is not rare as a reflex result of caries of the vertebræ. It may be diagnosed by resonance on percussion; absence of fluctuation; and absence of all signs of tumor under anæsthesia. In case of doubt, anæsthesia should always be resorted to. In addition to these signs, the unaltered position of the uterus constitutes an important one.

Distention of Abdominal Viscera.—Even without abdominal spasm a large amount of air sometimes accumulates in the intestines from hysteria, digestive disorder, or great obstruction in the canal. It may be known by resonance on percussion; absence of fluctuation; absence of all signs of tumor upon examination under anæsthesia; and the normal position of the uterus. By firm, steady pressure downwards towards the spine, kept up and increased after each expiration, resistance will be overcome, and deep exploration prove the absence of a tumor. This method was systematized by Rœderer.

Fecal tumor will be marked by absence of fluctuation; a peculiar "doughy" sensation upon manipulation; pain upon pressure; constipation; violent colic; and, most valuable sign of all, the creation of a distinct pit or depression when steady pressure is made at one point, the patient being anæsthetized. The action of cathartics and enemata is often entirely delusive as a test of fecal tumor.

Dr. Atlee relates a case of distention of the stomach in a man, in which that organ filled the entire abdominal cavity, and covered, like an apron, all the other abdominal organs. "Had the patient been a female," says he, "I should at once have pronounced it an ovarian cyst." Explorative incision would alone have accomplished diagnosis.

It may be thought unlikely that a distended bladder could be mistaken for an ovarian cyst, but it often gives the appearance of one. In one case in which this difficulty had existed for three weeks, I found the bladder distended so as to reach above the umbilicus, its neck being compressed by the neck of a retroverted pregnant uterus. Suspicion as to the nature of the tumor will be excited by interference with urination, constant involuntary discharge of urine taking place, and the very frequent concurrence, according to my experience, of retroversion of the pregnant uterus. Should aspiration be practised, the physical and chemical features of the urine will suggest a resort to the catheter, which will settle the question of diagnosis.

In considering the differentiation of hematometra, physometra, and cystic degeneration of the chorion, little reliance should be placed upon rational signs in comparison with physical. Cessation of menstruation and many of the other signs of pregnancy will be discovered in most cases, and, in physometra and cystic chorion, characteristic discharges will usually attend—air in the former, and bloody serum in the latter. The enlarged uterus will be recognized as the tumor in question by conjoined manipulation and Simon's method; but the decisive test of these conditions consists in the passage of the uterine sound, or of a silver catheter to the fundus, in order to allow of escape of imprisoned material, which, being collected, may be submitted to chemical and microscopical examination.

Hydrosalpinx sometimes develops into a large tumor. De Haen describes one which weighed seven pounds. To differentiate such a condition from ovarian cyst, but two methods can be relied upon: first, the removal of fluid, and examination by chemical means and the microscope; and second, explorative incision.

Fluid Peritoneal Accumulations.—It is often exceedingly difficult to differentiate between ascites and ovarian dropsy. The means which ordinarily enable us to do so are here stated. It must, however, be borne in mind that there are cases in which even the most important may be transposed. For example, an ovarian cyst sometimes establishes communication with the intestines, and becomes resonant; while, in ascites, where the amount of fluid is excessive and the mesentery short, dulness exists over the front of the abdomen. The rule is here adhered to, but the exceptions must not be lost sight of.

IN OVARIAN DROPSY.

1st. A small, round tumor will often have shown itself in the beginning in one iliac fossa;

2d. In supine posture a rotundity is observed in the abdomen;

IN ASCITES.

1st. The enlargement will have shown no small tumor at any point;

2d. In supine posture the fluid gravitates to sides of abdomen, and the abdominal surface is flattened;

IN OVARIAN DROPSY.

3d. Percussion made in supine posture gives dulness over surface of abdomen ;

4th. Change of posture alters area of dulness but little ;

5th. No evidences of cardiac, renal, or hepatic disease exist as a rule ;

6th. Skin is normal as to color, moisture, etc. ;

7th. Œdema of the feet is absent until a late period, when the patient has become exhausted ;

8th. Health fails slowly ;

9th. Sitting posture affects shape of abdomen but little ;

10th. Fluctuation ordinarily not so superficial, level fixed to great extent, ceases where intestinal resonance begins ;

11th. Aortic pulsation transmitted ;

12th. Fluid usually amber colored and tenacious, often like syrup, of various hues in polycysts, not spontaneously coagulable, always sticky when rubbed between fingers. Shows cylindrical epithelium, granular cells and matter, oil globules, and cholesterine, and contains paralbumen and metalbumen. The granular cell is distinguishable from other cells by its merely becoming transparent by acetic acid ; others increase in size ;¹

Specific gravity, 1.018 to 1.024.

IN ASCITES.

3d. Percussion gives resonance over abdominal surface because the intestines float on the fluid ;

4th. Change of posture alters area of dulness markedly ;

5th. Evidences of cardiac, renal, or hepatic disease almost always exist ;

6th. Skin, in majority of cases, gives evidences of cirrhosis by its parchment feel and jaundiced hue ;

7th. Œdema of the feet exists as an early sign ;

8th. Health fails early and rapidly ;

9th. Produces bulging often in Douglas's pouch and through navel ;

10th. More superficial, level changes with change of posture, perceived even where intestinal resonance exists.

11th. Not so.

12th. Fluid of light straw-color ; spontaneously coagulable from containing fibrin ; without sediment usually ; shows to microscope squamous epithelial cells, oil globules, pus cells, and amœboid bodies ; does not contain paralbumen, metalbumen, or cholesterine ;

Specific gravity, 1.010 to 1.015.

Sometimes, however, peritoneal accumulations are sacculated by encompassing lymph in one portion of the peritoneum ; among the intestines matted together by effused lymph ; or, as in a case recorded by West, enveloped by the omentum. "Between four and five quarts," says he, "of a dark fluid were found collected between the folds of the peritoneum." The amount of fluid thus imprisoned is often very large, and hence the difficulties of diagnosis which have led Mr. Wells² to assert, "I am aware of no means by which such cases are to be distinguished from ovarian dropsy." McDowell himself once opened an abdomen in such a case under the belief that an ovarian tumor existed. The intestines do not rise above the fluid as in simple ascites, but there is less rotundity to the mass, and less interference with respiration than are found to exist with ovarian cyst.

Diagnosis in these difficult cases must depend upon the results of aspiration, examination of contained fluids, Simon's method, and explorative incision.

The sudden appearance of hematocele, the immediate and often urgent symptoms which it excites, and the removal of a little fluid by aspiration will settle the question of diagnosis.

Colloid disease sometimes affects the whole peritoneal cavity. In some cases it appears to escape into it from a ruptured ovarian cyst; in others it originates there. Removal of a small amount of the characteristic material by tapping is the only means of diagnosis.

Cystic Disease of other Parts in the Abdomen.—Cysts of the broad ligament so closely resemble unilocular ovarian cysts as to be diagnostic only by explorative incision or aspiration. Their character might be suspected from superficiality of fluctuation, slight implication of general health, absence of emaciation, and slowness of growth; but the chemical and microscopical features of the contained fluid would alone decide positively. This fluid is as clear and pure in appearance as distilled water, showing when boiled after addition of acetic acid only a trace of albumen as an albuminate; is loaded with chloride of sodium; and contains only a few fat and blood globules. After evacuation the cyst walls cannot be felt, and tapping often proves curative. Spiegelberg removed such a cyst in 1869, the walls of which, unlike those of ovarian tumors, contained muscular fibres, and the fluid of which contained albumen.

Renal cysts have several times deceived the most skilful diagnosticians. Their characteristics are these: they ordinarily push the intestines forwards and not backwards; pus, blood, and albumen *usually* occur in the urine; these tumors grow from above downwards; they are rare and grow slowly; may be pushed up so that resonance occurs between tumor and pelvis; and the fluid contained shows none of the microscopical features of ovarian cyst, while it shows the chemical and microscopical elements of urine. Sometimes echinococci, which are frequent in renal cysts and unknown in ovarian, are found. The tumor is apt to be crossed by the descending colon or to lie outside of the ascending colon; it is usually marked by renal and not by menstrual derangement; and is usually unilateral.

Sometimes, however, a renal cyst occupies a median position; extends like an ovarian tumor into the pelvis; is attached to the pelvic organs; pushes the intestines aside like an ovarian cyst; contains fluid free from elements of urine; and even presents cholesterine and paralbumen. In such cases the determination of the point of attachment by Simon's method constitutes a most valuable resource.

Splenic and hepatic cysts are rare, grow from above downwards, give an area of dulness between tumor and pelvis, and in the fluid of the latter

the echinococcus is often discovered. In both Simon's method is of great value as a means of differentiation.

Parasitic cysts, the result of the presence of the echinococcus, may develop in any of the organs or tissues of the abdomen. Should the position of the tumor be such as to lead to doubt as to differentiation between it and ovarian cyst, diagnosis would be attainable only by aspiration and examination by the microscope and chemical means. The former would show the presence of the parasite.

Subperitoneal cysts are distinguishable from ovarian only by physical features of contained fluid and explorative incision.

Cysts growing from the uterus itself are not common. They may be recognized by Simon's method, by the chemical examination of their contents, and by the curative effects of tapping. Atlee reports three cases thus cured. Furthermore, the fluid which they contain separates into a coagulum and a pinkish or bright red portion which does not coagulate, and the peculiar cells of ovarian fluid do not appear in it. Ovarian fluid never spontaneously coagulates.

Fibro-cystic tumors are difficult of differentiation from ovarian cystomata, but when we compare our present position with reference to this subject with what it was only a few years ago we have great cause for congratulation. I here give only the most prominent differences between the two diseases, and hence those upon which reliance can really be placed. To many of these even, however, there are exceptions; to several there are none.

UTERINE FIBRO-CYST.

Grows slowly and occurs usually after thirty years of age.

Uterine cavity generally enlarged.

Connection of tumor and uterus usually, though not always, intimate.

Fluid spontaneously and quickly coagulates.

Uterus sometimes lifted above pubes and out of pelvis, often in front of tumor.

Health remains good for years.

Microscope shows fibre cell (Drysdale).

OVARIAN CYST.

Grows more rapidly and is less governed by age.

Uterine cavity not usually enlarged.

Uterus more independent of tumor.

Never does so.

Uterus generally behind tumor.

Generally fails within three years.

Shows the peculiar granular and epithelial cells of ovarian cyst.

Although these signs are all of some value, those which should be regarded as most reliable are the following: spontaneous coagulability of contained fluid; presence of the fibre cell; increased capacity of the uterus; and the determination of its connection with the tumor by means of Simon's method of rectal exploration. Explorative incision should not rank high as a diagnostic method, for simple section of the abdominal walls is not enough, and the exploration which is further required to decide the point exposes the patient to great danger.

Excessive Development or Displacement of other Viscera.—If ascites do not attend hepatic and splenic enlargement, there will never be any great difficulty in distinguishing them from ovarian cystoma. Should it do so, tapping should be resorted to.

Uterine fibroma may be recognized by its peculiar hardness, slowness of growth, absence of fluctuation, continuance of good health and absence of emaciation, tendency to increased menstrual flow, irregular surface, intimate connection with uterus, increase in capacity of this organ, and absence of fluid upon aspiration or tapping. It must not be forgotten, however, that the uterus may be normal in size, and the tumor entirely independent of it.

"The symptoms caused by the growth of large, fatty, and fibro-plastic tumors from various parts of the peritoneum or mesentery," says Spencer Wells,¹ "so much resemble those of true ovarian disease, that their real nature can only be determined in some cases by an exploratory incision or tapping." Should fluid be removed from them it would lack the peculiar ovarian cellular elements, and would spontaneously coagulate, and Simon's method would in some cases demonstrate the fact that the point of origin is not the ovary.

A movable or floating kidney might be mistaken for an ovarian cyst, but for so small a one that the question of ovariectomy would not arise in connection with it. Time would prove that it was not a growing ovarian cyst.

Dr. J. K. Dale,² of Little Rock, Arkansas, reports an interesting case of tumor supposed to be ovarian, but which upon explorative incision was found to be the liver, which was "free and movable, very much enlarged, occupying the right half of the pelvis, encroaching upon the bladder and rectum, and interfering very materially with the due performance of their respective functions." I had myself precisely the same experience in a case in which I made an explorative incision in New Haven, in presence of Drs. Whittemore, Jewett, and others.

Pregnancy.—The ordinary signs of utero-gestation, both rational and physical, should be carefully considered in eliminating normal and interstitial pregnancy. More than one woman has died from the passage of a trocar and canula into the pregnant uterus after abdominal incision, an accident certainly scarcely more deplorable for the patient than for the unfortunate practitioner whose carelessness causes it. I say carelessness, for the reason that the passage of the uterine sound as a means of differentiation would always prevent error. True, this would result in premature labor in normal pregnancy, but how much better this, even at the sacrifice of the child's life, than the terrible mishap just alluded to.

During the past eighteen months three cases of pregnancy at full term

¹ Op. cit., p. 146.

² Richmond and Louisville Med. Journ., April, 1874.

have been referred to me as ovarian cysts, and this not by ignorant men but by very capable practitioners. Two out of the three pregnancies were illegitimate, and the examiners were misled by relying upon rational instead of physical signs. Reliance should be placed especially upon discovery of the fetal body and movements by careful palpation; upon ballottement between the fifth and seventh months; upon recognition, by vaginal touch, of the movable presenting part after that time; and upon the fetal heart sounds and placental bruit. The gastric, mammary, and nervous symptoms of pregnancy sometimes result from ovarian disease.

Should the child be dead many of these symptoms will be absent, and if it be retained in utero, as it sometimes is, for many years, diagnosis must depend upon the history of the case, Simon's method, the uterine sound, and dilatation of the cervix so as to admit of digital exploration. In tubal or ventral pregnancy diagnosis would prove more difficult, but the same means will aid in making it, for even when the fœtus is developed out of the uterus that organ enlarges decidedly.

Not only should a differential diagnosis be made between pregnancy and ovarian tumor; even after recognition of the latter, the former should always be eliminated as a coincident condition.

Dropsy of the amnion gives very superficial fluctuation, and might deceive one not careful in diagnosis. A patient investigation of the case, and consideration of its history would ordinarily remove all doubt. The fibres of the cervix uteri are usually expanded, the cervix moves as the tumor is rolled in the abdomen, and the uterine sound passes far up into the cavity above. Should aspiration have been resorted to, the fluid removed will be found to present the following features. It is alkaline, with specific gravity 1005 to 1010, contains albumen but no fibrin, and presents to the microscope epithelial cells and oil globules. Meconium and blood alter these features.

Diseased States of Pelvic Walls and Areolar Tissue.—Enchondroma or encephaloid disease of the pelvic walls is hard, free from fluctuation, and firmly fixed and united to the part from which it grows. Rectal exploration and abdominal palpation will prove these facts, and if aspiration be attempted the absence of fluid will be evidenced.

Pelvic abscess usually results from cellulitis, which presents marked symptoms. It rarely extends to the umbilicus, hardness will be felt in one or other iliac fossa, it is fixed in the pelvis, and aspiration gives evidence of pus. Excessive pain attends it, with throbbing and pain down one thigh, and the outline of the mass is obscure and unsatisfactory. There is often a tendency to point, there is pain upon pressure, and there are generally chills and fever.

In the early days of ovariectomy, when adhesions were regarded as a bar to extirpation of these tumors, the question of the existence of adhesions possessed important bearings. Now, however, when even the firmest

attachments are broken not only with impunity, but with results which are often better than those which follow the removal of a tumor from a healthy peritoneum, it sinks into comparative insignificance. This is a most fortunate fact, for the reason that the determination of the existence of adhesions is little more than guess-work. Beyond a few very general facts by which we may venture to form a surmise, all is empirical prediction with reference to the matter.

If the case have developed very rapidly and be believed to be unilocular, there are probably no adhesions.

If there have been symptoms of peritonitis, there are probably adhesions. If the case have been painless, there are probably none.

Should the abdominal walls roll freely over the tumor, the patient lying upon her back, and should the tumor fall low in the abdomen as she suddenly sits up, there are probably no anterior adhesions. But posterior ones may exist, and not be suspected from this examination.

If, upon vaginal examination, the uterus and base of the tumor exhibit immobility such as is found in pelvic peritonitis, and if, upon change of posture from erect to supine, these parts do not retreat from the finger in the vagina, there are in all probability strong pelvic adhesions.

All these signs are unreliable, and disappointment will surely follow any great degree of confidence which is reposed in them, but a compensation is to be found in the fact already stated that even firm adhesions do not contraindicate removal.

It is always desirable to know the length of the pedicle. This point can be approximatively settled, in a certain number of cases, by the means recommended by Tixier,¹ of Strasbourg. He says:—

“Practice and observation have enabled us to diagnose, in certain cases, the probable length and variety of the pedicle. Certain objective and subjective signs may guide the practitioner and facilitate his diagnosis; a very important matter, since on the length of the pedicle often depends the success of the operation.

“We have hitherto been able to diagnose with almost perfect certainty three varieties: the long, short, and twisted pedicle.

“*The long pedicle.*—The form of the abdomen has a peculiar aspect; this is the form *en besace*.—The hypogastric portion of the abdominal wall is applied to the internal surfaces of the thighs, and the ovarian tumor, forcibly projected forwards, seems to be removed from the superior entrance of the pelvis. A vaginal examination reveals an elevation of the cervix uteri, and the index finger passed into the pelvic excavation does not meet with the tumor at any point. The womb is very movable and can be readily displaced. The collection of these symptoms induces one to presume that there is an elongated condition of the broad ligament and of the

¹ Le Pédicule et son Traitement après l'Operation de l'Ovariectomie, Strasbourg. 1869; Archives Générales de Médecine, Juillet, 1870.

Fallopian tube, a condition favorable for forcing the pedicle without the abdominal wound.

"The short pedicle.—The existence of the short pedicle may be assumed in the presence of the following symptoms: in the first place, the form of the abdomen differs from that described above; one may observe a lateral extension without pronounced prominence of the median portion. In attempting to introduce the tip of the finger between the tumor and the pubes, one feels through the skin that the growth passes into the pelvic excavation; its base seems to be seated over the pelvic opening. The vaginal touch denotes a sinking of the cervix uteri, and a more or less pronounced immobility of the womb. If the pelvic excavation be then explored with the finger, one feels that it is not free, and that certain parts of the tumor are contained within it. In the presence of these facts the surgeon may assume that there is a greater or less degree of shortening of the pedicle.

"The twisted pedicle.—At first sight this torsion seems difficult to determine. It may, however, under certain conditions, be diagnosed with greater certainty than the two preceding varieties. Its existence may be concluded whenever the following symptoms have been observed:—

"The patients experience at intervals very acute pains radiating downwards along the vein corresponding to the affected ovary, and upwards to the lumbar region on the same side. These pains are excited by work and fatigue. They break out also when the patient is in bed, and when she wishes to change her position. One hears also from these patients of very strong uterine cramps analogous to those occasioned by deligation of the pedicle. The cystic fluid is more or less deep in color, presenting a hemorrhagic appearance. The touch in these cases gives no precise indication. One can only acquire the idea of the existence of an habitually long and thin pedicle in cases of this kind."

Although I have not been able to draw as positive and certain conclusions in reference to the determination of the length and character of the pedicle, by aid of these means, as M. Tixier has, I nevertheless regard his suggestions as valuable, and well worthy of application to every case in which ovariectomy is contemplated. One rule which I have found very reliable is this—if the tumor be found far up, out of the pelvis, upon vaginal examination, the pedicle cannot be very short. If a tumor which is not very large be fixed in the pelvis so that it cannot be pushed out, the pedicle is probably a short one. The value of this sign may be increased by examining in the knee-elbow position.

When doubts exist upon any of the points here stated, which cannot be removed by those means of investigation which are limited by the abdominal walls and pelvic roof; which, in other words, extend to, but not beyond, the peritoneum in their immediate application, there exist three methods of exploration which bring the explorer into direct contact with the interior of the abdomen and of the tumor. Those positive and reliable

means, which may justly be styled the crucial tests of abdominal tumors, are the following :—

Aspiration ;

Tapping ;

Explorative incision.

To these a certain amount of danger undoubtedly attaches ; but when compared with the great danger arising from operation upon an uncertain diagnosis, it becomes trivial. Many an inappropriate case has been submitted to the operation of ovariectomy which would have been spared it, with the promise of a prolongation of life, had one of these methods been previously employed. They are of course not to be confined to the determination of the character of a tumor alone, but that of the origin, attachments, and complications of any abdominal growth.

Aspiration.—The introduction of aspiration into use for the diagnosis of ovarian tumors constitutes a decided advance. The instrument generally employed in this country is that of Dieulafoy, shown in Fig. 28. By this a delicate, hollow needle is passed into the tumor, and powerful suction applied through an India-rubber tube connected with a strong syringe, in which a vacuum is created by an upward movement of the piston. Through the most delicate needle clear fluids will pass, and through the largest, which is very small when compared with an ordinary trocar and canula, very tenacious colloid material may be drawn. By this beautiful instrument a large polycystic tumor filled with tenacious, syrupy fluid may be readily emptied by turning the needle into new cysts as those first punctured are evacuated. And when complete evacuation is not desired, it furnishes a supply of fluid for chemical and microscopical examination. It greatly diminishes the dangers of such evacuation as compared with those resulting from tapping. The dangers attending that operation are the following : 1st, hemorrhage from a bloodvessel in the abdominal or cyst wall ; 2d, admission of air to the cavity of the sac and decomposition of fluid, which may create inflammation of the cyst wall and septicæmia ; 3d, subsequent escape of the contents of the tumor into the peritoneum ; and 4th, fatal injury from wounding of an intestine or solid organ. Spencer Wells mentions a case in which an acquaintance of his tapped a patient who died soon after. Upon autopsy two and a half quarts of blood, which had escaped from a wounded varicose vein, were found in the peritoneal cavity. All these dangers are considerable from ordinary tapping ; decidedly less so from aspiration.

It may then safely be said that aspiration accomplishes all that tapping does, at infinitely less risk, and that the former should, when practicable, always be preferred to the latter procedure. Unfortunately the cost of the aspirator is large, and it may not be attainable, or the fluid may be too thick to flow through it. When it is desired merely to obtain a small amount of fluid for examination, the hypodermic syringe may be employed,

even in preference to the aspirator. The use of this instrument, which was suggested by Dr. H. F. Walker and practised by myself before our knowledge of that just described, consists simply in plunging the needle with syringe attached through the abdominal walls at different points, drawing out as much fluid as possible, and expelling this into a test-tube for examination. This method serves to determine the following points: 1st, whether a tumor is fluid or solid; 2d, whether it contains clear, slightly albuminous fluid or ichorous and irritating material; 3d, by means of several punctures whether it be multilocular or not. In 1875, Dr. Peaslee declared that he did not regard the aspirator as safer than the trocar. Surely an instrument with which we venture to tap the distended intestines, the pericardium, and the bladder, must be safer than one which leaves so large a hole as the trocar.

Although it has been stated that aspiration is much less dangerous than tapping, it must not be regarded as free from danger. Death has repeatedly resulted from it, and it should be regarded as an axiom that all abstraction of fluid from an ovarian cyst, by whatever means it is accomplished, is attended by danger. The smaller the puncture made, however, the less the danger, I think. Cases of peritonitis, some of them fatal, after aspiration, are recorded by Atlee, Little, Lusk, Munde, Gillette, and Jenks; cases of decomposition of sac contents and septic fever are reported from the same cause by Goodell, Peruzzi, Schnetter, Skene, and myself; and a case of peritonitis and adhesions after diagnostic puncture by a hypodermic needle by Fauntleroy of Virginia.

Tapping.—Tapping is a means of great value in the diagnosis of ovarian cyst, and, where the aspirator is not attainable, should never be lightly disregarded. Atlee, Wells, Peaslee, Spiegelberg, and many other leading ovariologists of our day place great stress upon its value, and although some, like Stilling, have entitled it, in the warmth of deprecation, “a crime,” it may safely be said to have overcome the greater part of the objections once urged against it, and to have fully established its claim to consideration as a valuable diagnostic and palliative measure. Wells¹ has proved that it does not considerably increase the mortality of ovariectomy. It is often even an excellent preparation for that operation, and, when practised with proper precautions, its dangers are greatly diminished. It must not be forgotten, however, that it is attended by dangers, which are not matters of speculation, but of fact—established by statistical evidence. Of 130 instances of first tapplings analyzed by Kiwisch, 17 per cent. of the cases died within a few hours or days after the operation.² This is certainly a mortality to be greatly dreaded, especially when the operative procedure which induces it is not curative, but one resorted to merely for palliation or the accomplishment of diagnosis.

¹ Op. cit., p. 275.

² Hewitt, op. cit., p. 637.

The operation of paracentesis, or tapping, consists of the introduction of a trocar and canula through the walls of a sac containing fluid, and allowing this to flow away. Of all the operations for relief of ovarian dropsy this is the oldest, and the one which has been most frequently performed. The advantages which it offers are facility of performance, quickness of relief, and immunity, to a certain extent, from the dangers which attend more radical procedures adopted in these cases.

Although, in a limited number of cases, it has been declared to have proved curative, it should never be practised with any reliance upon its doing so, for doubt exists as to the authenticity of the facts. Furthermore, it is attended by the immediate dangers recently mentioned, and by the more remote one of exhausting discharge from the sac, which may continue so long as to wear out the patient's strength. M. Courty collates one hundred and thirty cases treated in this way by Kiwisch, Lee, and Southam, of which these are the results:—

46	died	after	the	1st	tapping.
10	"	"	"	2d	"
26	"	"	"	3d	to 6th tapping.
15	"	"	"	7th	to 12th "
13	"	"	"	12th.	tapping.

Of 21 of these cases treated by Mr. Southam, 4 died within a few hours after the operation, 3 within the first month, and 14 within nine months. Kiwisch lost 9 out of 64 within twenty-four hours after the first tapping. Dr. Fock,¹ of Berlin, gives the following table, displaying the dates at which death occurred after first operations in 132 patients:—

25	died	within	a	few	days.
24	"	"	"	6	months.
22	"	"	"	12	"
21	"	"	"	24	"
11	"	"	"	36	"
29	only	were	alive	at	end of last date.

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It will thus be seen that reliable statistical evidence places this procedure in the position of a palliative measure which is generally followed by advance of the disease, and not rarely by immediate evil results. Still it must not be lost sight of that death may be warded off by the operation, many existing evils alleviated through the course of a period varying from ten to twenty-five years, and that, in a few cases, complete cure may have been effected. Dr. Ramsbotham records an instance in which one hundred and twenty-nine tapplings were performed in eight years, and four hundred and sixty-one gallons of fluid removed; and Dr. Martineau another, in which eighty operations evacuated in twenty-five years seven

¹ Simpson, op. cit., p. 347.

hundred and twenty-nine gallons. I had recently under my care a patient who for five years has had a large cyst which has been tapped forty-five times.

I have stated that a considerable number of cases are on record in which it is asserted that simple tapping has cured ovarian cystoma. It is a matter of great doubt whether the cases thus cured were true ovarian cysts, or cysts of the broad ligament, which are often thus cured. Knowing of no well-authenticated case in which ovarian cyst has been thus permanently cured, we are not warranted in regarding this measure as anything more than a valuable diagnostic means and a palliative resource, which often saves life when it is threatened by one of the consequences of the cystic disease.

In case the contents of the cyst do not appear to be those of true ovarian cystoma, but present the characters of the fluid of cyst of the broad ligament, tapping may be practised with a reasonable hope of curative results.

The circumstances which ordinarily indicate the propriety of paracentesis as a palliative measure are, rapid accumulation which interferes with some important function; coexistence of ovarian disease with pregnancy; solitary character of the cyst; firm adhesions which bind the tumor down so as to prohibit a more radical procedure; great doubt as to diagnosis; or constitutional debility, which prevents the tolerance of a more serious operation. The operation may be performed through the abdominal, vaginal, or rectal wall.

Tapping through the Abdominal Wall.—The patient being placed upon the side, a many-tailed bandage, such as is employed in paracentesis abdominis, is passed around the body. Its ends being held by assistants, traction upon them makes firm pressure, evacuates the tumor, and prevents syncope. A fold of skin being now pinched up between two fingers, it is penetrated by a lancet or bistoury upon the linea alba, midway between the symphysis pubis and umbilicus. The trocar and canula are then plunged through the two layers of peritoneum and the wall of the cyst. Through the canula thus introduced a flow of fluid will take place, which, if such an instrument as that represented in Fig. 254 be employed, will be conducted by an India-rubber tube attached to the canula into a tub placed by the side of the bed upon which the patient lies. The free extremity of this tube is kept carefully immersed in water in the tub, to prevent entrance of air into the sac.

Should other cysts be felt through the abdominal wall after emptying the main one, the canula may be made to empty them, by pressing it firmly against them.

The following rules should be observed in abdominal tapping of ovarian cysts, for it is highly probable that a strict adherence to them would very favorably affect the statistics of the operation.

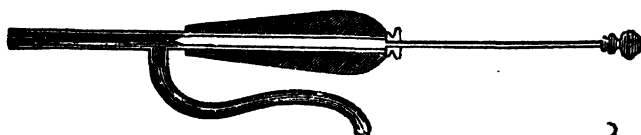
1st. Never tap while the patient sits, but always as she lies upon the side or back.

2d. Cut the skin with a lancet, and employ a trocar and canula, with tube immersed in water, so as to prevent entrance of air.

FIG. 254.



FIG. 255.



3d. When the fluid withdrawn is viscid, always wash-out the cavity of the sac, if it be emptied, with warm, carbolized water.

4th. Should there be oozing of blood from the puncture, pass a harelip pin deeply through its lips, and affix a figure-eight ligature.

5th. Keep the patient recumbent and very quiet for two or three days.

Tapping through the Wall of the Vagina.—This operation has been more or less in vogue for a long time. According to Kiwisch, it was first performed by Callisen in 1775, but has received little notice until modern times. Velpeau¹ declares that he advised it in 1831, and that it was adopted a few years afterwards by Neumann and Récamier. In Germany it has of late years been frequently resorted to, and Scanzoni gives the following reasons for preferring it to abdominal paracentesis. It “more often produces a radical cure than the other method just considered, and that especially because the cyst, opened in its lowest part, can empty itself more completely. If the puncture by the vagina were always possible, the abdominal puncture would soon entirely disappear from surgical practice; but unfortunately, this is not the case, for the conditions necessary for this operation are met with in but few patients; in fact, it is rare that the lower portion of the tumor descends sufficiently low into the pelvis to be accessible to vaginal touch, and, furthermore, in many cases where the tumor can be reached, it does not present in its lower portion any cavity filled with liquid, but only solid masses of a sarcomatous, colloid, or cancerous nature.” Kiwisch declares that he “unconditionally” prefers it to abdominal tapping, whenever it is practicable.

By this method, the advantages of which are thus strongly stated by the authorities just mentioned, two of the dangers of tapping, secondary escape of fluid into the peritoneum, and consequent peritonitis, are unquestionably

¹ Dict. de Méd., tom. xxii. p. 589.

lessened, but others are as surely increased, namely, those of injury to portions of the intestine, and entrance of air into the sac, with consequent decomposition of contents, septicæmia, and inflammation of the sac walls. My experience with the method is not large, but it leads me to agree with Spencer Wells that, "as a rule, air enters the cyst, the opening fills up, and the fluid remaining in the cyst, or that freshly secreted, putrefies. Suppurative inflammation of the lining membrane of the cyst comes on, and is accompanied by a low form of exhaustive fever or pyæmia." Where a cyst is firmly fixed in the pelvis, however, this method, followed by drainage and antiseptic injections, is one of great value.

The operation is thus performed: the bladder and rectum having been carefully emptied, and the patient anæsthetized, she should be placed upon a table in the position for lithotomy. The operator then introducing the index, or, as is better, the index and middle fingers of the left hand, places them against the most dependent and accessible part of the tumor. Upon the finger or fingers, a canula ten inches long is passed up and pressed against the tumor, the point of the trocar being drawn in a little. The operator then plunges the trocar through the vaginal walls into the tumor, and withdrawing it allows the fluid to flow away through the canula. The patient is then put to bed, quieted by opium, and guarded against all influences which might induce inflammation as long as such an accident is probable.

Explorative Incision.—Of all the means for definite and certain settlement of the question of diagnosis in abdominal tumors, I esteem explorative incision most highly. As, however, it involves not only opening the peritoneal cavity, but usually considerable manipulation of its contents, it necessarily involves a certain amount of danger. While the other methods may be practised several days or even weeks before the operation of ovariectomy, this should constitute, or rather be merged into, its first step. It yield information which makes the surgeon decide against operation, the opening made should be closed; if the light which it throws upon diagnosis favors the radical procedure, the incision should be at once enlarged and prolonged into the final abdominal opening.

Explorative incision should be thus performed. The patient having been prepared for the procedure exactly as if we had determined upon ovariectomy, she is placed upon the table and surrounded by assistants, etc., as in the case of the radical operation. An incision is then made by the bistoury upon the median line, one inch in length. This is carried down to the tumor, and the finger is at once gently swept over this in every direction, so as to ascertain its character. The tumor may be emptied with a *very small trocar*, so small that the opening made may be readily closed if it be deemed best to desist from radical operation, or by the aspirator. If the sac be emptied by this means, the hand is then passed into the abdominal cavity and complete exploration made. If it be not completely

emptied, a sound should be passed into the uterus and two fingers or the hand carried down through the abdominal opening to the fundus uteri, to ascertain as accurately as possible the origin and attachments of the solid mass. In case abdominal effusion have existed, this of course at once flows away, and any growth existing in the abdomen comes within the reach of the finger.

Before leaving this part of my subject let me lay before the reader a few rules, the observance of which will diminish very greatly the chances of his falling into errors of diagnosis in operating for ovarian tumors.

1st. Never perform ovariectomy without carefully exploring the uterus by the sound, if this be possible.

2d. Before operation, should doubt exist as to diagnosis, always remove a small amount of fluid by the hypodermic syringe or aspirator for chemical and microscopical examination.

3d. If any doubt whatever exist as to diagnosis, anesthetize the patient and examine carefully.

4th. If doubt still exist, empty the cyst or cysts by aspiration or tapping.

5th. Should all doubts not be cleared up at the moment of operation, begin it as an explorative incision and proceed or not as instructed by what is discovered.

Spiegelberg¹ makes the important declaration that when upon drawing off fluid either from a cyst of the broad ligament or an ovarian cyst, it is found to be of low density and of serous nature, it may be taken as evidence that the cyst wall has ceased to grow actively, and is merely being distended by accumulation of its contents. He opposes operation under such circumstances, declaring that emptying the cyst will of itself often effect a radical cure.

Treatment.—The medical treatment of ovarian dropsy by diuretics, hydragogue cathartics, diaphoretics, mercurials, absorbents, mineral waters, etc., has now been faithfully tested and found to be inefficacious. After a careful search through the records of the subject, one is forced to the conclusion that there is a lack of evidence substantiating the possibility of the accomplishment of absorption by these means. All that can be anticipated in these cases from medication is sustaining the nervous and sanguineous systems by tonics and stimulants; regulating disordered functions by diaphoretics, cathartics, diuretics, and anti-emetics; and relieving local inflammations by the ordinary means usually resorted to under such circumstances. I am the more urgent in insisting upon the fact of the inefficacy of constitutional treatment, because I so often meet with fully developed cases of ovarian dropsy which bear evidence of a variety of attempts by cupping, leeching, inunction, painting with iodine,

¹ Archiv für Gynäkologie, vol. xiv. s. 175.

and correspondingly active internal treatment, to dissipate the accumulation. There is but meagre proof extant that such means have effected cures, and there is nothing more certain than that they lower the tone of the system and depreciate the vital forces. A recognition of this fact led Dr. W. Hunter, before the introduction into practice of the present methods of surgical treatment, to say that, "the patient will have the best chance of living long under it (ovarian dropsy) who does the least to get rid of it."

Not only is it to surgery alone that we must look for aid, but to one surgical procedure—ovariotomy. Even after the acceptance of ovariotomy as an operation, the medical profession strove, and very properly, too, against its universal adoption in cases of ovarian tumor, and endeavored to discover less radical processes which were to share the field with it. Thus up to a late day were tried, and even now, in rare cases, are tried, tapping, drainage, incision, and injection of the sac. I do not give the details of these procedures here, for the reason that I question the propriety of their adoption. In the present state of our knowledge, whether the tumor be large or small, simple or complex, the attempt to employ other curative means than ovariotomy can scarcely be regarded as warrantable, in view of the dangers attaching to them and their uncertainty of success, and, on the other hand, the hope of good results which is held out if the patient is sustained until complete extirpation can be accomplished.

CHAPTER XLIX.

OVARIOTOMY.

Definition.—Ovariotomy consists in the extirpation of the diseased ovaries.

History.—The history of the operation goes back only to a very recent date. It has become customary for those who have written upon it to cite ancient authors to prove that even as long ago as the time of the early Greeks the ovaries were often removed in the inferior animals as is done in our own time. The writings of Aristotle put this beyond question. It is even asserted that among the Lydians castration of the human female was practised in order to enable them to serve as eunuchs. In more recent periods, we are told by Wierus that a Hungarian swineherd, incensed by the lasciviousness of his daughter, removed her ovaries, in hope of reformation, after the manner in which he was in the habit of spaying his swine. Towards the close of the eighteenth century both ovaries,

which had descended into the inguinal canals, were removed by Dr. Percival Pott, of England. But all this, though interesting as a matter of physiology, has little to do with the operation of ovariectomy, according to the true signification of the term. In the one case a minute and healthy gland, which is sparsely supplied with blood, was removed from a healthy peritoneal cavity. In the other a huge sac, which is supplied by large bloodvessels, and has in many instances contracted adhesions to a diseased peritoneum, requires extirpation.

The idea of removing large ovarian cysts, even, is not new, since it was discussed in 1685 by Schorkopff, in 1722 by Schlenker, in 1731 by Willius, in 1751 by Peyer, and in 1752 by Targioni. In 1758, Delaporte even went so far as formally to propose the operation to the Royal Academy of Surgery. As the eighteenth century approached its close, the suggestions of the writers already mentioned were not forgotten, but were from time to time repeated; among others by John Hunter in 1787, and later still by William Hunter. In 1798, Chambon ventured to prophesy that it would in time become a recognized resource in surgery; and in 1808,¹ Samuel d'Escher, a student of Montpellier, proposed a specific plan for its performance based upon the teachings of one of his masters, M. Thumin.

In 1786, one observer stood upon the very verge of the great discovery, very much nearer than Laumonier, by some supposed to be the discoverer, ever did, and yet failed to systematize it as a surgical resource. Like many a man before and since his time, he recognized and appreciated a *fact*, but failed to connect this with a *law*. The following is a quotation from a work written by Thomas Kirkland, an Englishman, and published in London in 1786. It is entitled, "An Inquiry into the Present State of Medical Surgery."²

"A woman, betwixt twenty and thirty years of age, had been tapped twice for an ascites, and a large quantity of water taken away at each time; but after the last operation the puncture did not heal, and, in a little time, a substance they did not understand protruding, I was desired to see her. It was evidently a part of a cyst, and, as it had already dilated the sore, I persuaded her to let it alone till the opening became larger, in hope of a better opportunity of affording relief. Accordingly, in ten days or a fortnight the protrusion was much larger, and by the help of a dry cloth a cyst, that would contain five or six gallons of water, was gradually extracted. More than a quart of matter immediately followed, and more was daily discharged for some time, yet the woman recovered without further trouble than keeping the parts clean, and afterwards bore several children."

Later on in his work he says:—

"We have given an instance, p. 195, where a cyst being taken away cured an ascites; and, seeing medicines do not avail in encysted dropsies

¹ Wieland and Dubrisay, French translation of Churchill on Dis. of Women.

² Med. Record, June 15, 1867, from Exchange.

of the abdomen, is it not worth our while to consider whether, when they are unconnected with the adjacent parts, after taking away the water, the patient might not sometimes be cured by enlarging the puncture, pressing the cyst forward, and drawing it out?"

He then proceeds to examine the difficulties in the way and the objections which may be brought against the operation, and thus concludes:—

"At present, I offer these hints to those who think the subject deserving attention, and time will probably determine the question."

Thus, as we advance from more remote periods to the beginning of the nineteenth century, we find the minds of physicians being gradually prepared for the reception of ovariectomy, as its consummation was step by step approached. But all that we find accomplished up to this time is the promulgation of ideas, prophecies, and propositions, and the performance of accidental operations, or of those upon healthy ovaries.

In 1809, the first real case of ovariectomy ever undertaken was successfully performed by Dr. Ephraim McDowell, of Kentucky. His first case was successful, the patient living twenty-five years afterwards. Subsequently he operated thirteen times, with eight favorable results. It may confidently be asserted that the history of no operation has been more thoroughly sifted than this, and that, up to the present time, nothing can be clearer than the fact that to McDowell belongs the credit of priority of performance. It is interesting to examine the competitive claims which have been put forward in reference to the matter. First, in chronological order, is that of Dr. Houstoun,¹ of Scotland, who operated in 1701, and whose case, says Mr. Wells,² makes it "appear that ovariectomy originated with British surgery, on British ground." This statement will excite wonder, and the claims of the operator fail to attract attention when it is stated that nowhere does Houstoun claim to have removed the cyst, or even a part of it. He merely treated a case of ovarian cyst successfully by incision.

The second is that of Laumonier, of France. Of him Baker Brown says: "The first who attempted extirpation appears to have been Aumonier, of Rouen, in 1782, and he was successful." In this statement, as Dr. Parvin has pointed out, Mr. Brown was wrong in three points: first, as to the fact; second, as to the name of the operator; and third, as to the date. The supposed ovariectomy was performed in 1776, by Laumonier, and was really the opening of a pelvic abscess.

The third is that of Dzondi, of Halle. As the patient was a boy, the claim requires no further consideration.

In 1821, Dr. Nathan Smith, of this country, operated successfully. In 1823 Dr. Lizars endeavored to introduce the operation into Scotland, and

¹ Amer. Journ. of Med. Sciences, vol. vii., 1849, p. 534.

² Op. cit., p. 299.

operated four times, but his results were bad. In one case the tumor was uterine and was not removed; in one no tumor could be discovered after abdominal section; and one of the two cases upon which ovariectomy was performed died.

Since this period, Atlee, Peaslee, Kimball, and Dunlap have been most influential in establishing the operation in America. In England, Dr. Charles Clay, in 1840, pressed it upon the notice of the profession, and he was soon ably sustained by Lane, Wells, Keith, Bryant, Baker Brown, and many others, whose names have become famous in connection with it.

"It is only within the last five years," says Grenser, writing in 1871, "that much progress has been made in Germany in this operation." Unfortunately, for many years insuccess appeared to attend it, and thus the voices of the most eminent and authoritative were raised against it. Of the first three patients ever operated upon there (by Chrysmar, in Wurtemberg), two died. Chrysmar commenced operating in 1819, and his results were certainly not such as to popularize a new and dangerous procedure. In 1828 the adverse criticism of the great Dieffenbach was pronounced in these strong terms: "Whoever¹ considers the opening of the abdominal cavity as a light matter, and, as Lizars seems to believe, that the difficulties are small, whoever thinks that this operation is accompanied by no more dangers than other operations, must be very thoughtless; for me, my one case is sufficient." The "one case" to which he refers, and from which he drew so illogical and hasty a conclusion, was an incomplete operation. In spite of the adverse weight of this opinion, in 1835 Quittenbaum, in 1841 Stilling, and in 1851 Martin, operated in a few cases, and with varying success. Writing of the operation at this time, when overclouded by repeated insuccesses, it had failed to command the confidence of the profession, Grenser says: "Most of the ovariectomies performed within the last forty years had a fatal termination, and as a consequence reliance could not be felt in it, and confidence in it was altogether shattered when the celebrated Dieffenbach took ground against the operation." Dieffenbach's opinion in 1828 has been given; let us see how the experience of twenty years affected it. In 1848 he wrote: "The operation does not benefit either patient or physician; the idea of opening into the abdomen of a sick, cachectic woman, affected with a hard tumor of the ovary, or even employing Lizars' method with cross-incisions, in order to remove the tumor by force, seems neither reasonable nor useful." He modified his opinion somewhat where the tumor was fluid, of small size, and movable. Thus wrote the great surgical light of Germany, and while he wrote American and English surgeons were gaining great results for humanity and for science in this same field. It must not be supposed that even in his own country advances were not being made, for Stilling,

¹ Grenser, Report on Ovariectomy in Germany.

Büring, and others were carrying on the work. In 1850 the latter announced an important advance, namely, that adhesions should not be considered as a contra-indication to removal.

In 1852 Edward Martin declared that the question was no longer as to the propriety and efficiency of ovariectomy, but of circumstances favorable to success. Martin's rules for operating, read even by our present lights, are most of them excellent.

About this time the voice of Kiwisch was raised against the operation. He collected the statistics of 54 cases, of which 51 ended fatally, and concluded that certainly over half of all submitted to operation died. It was soon after this that Scanzoni and Gustav Simon gave their evidence against the operation, and increased its disfavor to such a degree that, as Grenser says, "its very existence was threatened." This opposition seems to have lasted up to 1864, when the tide appeared to turn in its favor, and it soon numbered among its advocates Breslau, Gusserow, Hildebrandt, Spiegelberg, Martin, Stilling, Veit, Wagner, and Billroth. Grenser collected in 1871 the statistics of 129 operations performed in Germany, of which 60, a little less than half, recovered. When these results are compared with English and American statistics of that period, they show that Germany had much to make up. That she has done this is proved by the excellent results obtained by Schröder and other operators of the present time, and to-day it must be conceded that in this department of surgery she stands fully abreast with other countries.

According to Grenser we owe to Germany two of the most important of the improvements which have taken place in the operation since the days of McDowell: first, the adoption of the short incision and tapping the sac *in situ*, which originated with Quittenbaum; second, the external treatment of the pedicle, which he declares was first resorted to and its advantages insisted upon by Stilling in 1841, and not by Duffin in 1850. In 1849, Martin first secured the pedicle in the lips of the wound. There are other advances which have been made in Germany; but I mention only those which have had a decided influence on the operation.

Into France the operation was introduced, or as some French writers express it, "reintroduced," by Dr. Woyerkowski, in 1844. It was subsequently performed by Vaullegeard, in 1847, and later still by Nélaton, Maisonneuve, Jobert, Demarquay, and other surgeons of Paris. The results of these attempts, however, had the effect of casting discredit on the operation, from which it is only now emerging, thanks to the writings of Jules Worms, Ollier, Labalardy, Vegas, and more especially to those of Koeberlé, of Strasbourg. When it is stated that all these writers have published since 1862, it will be appreciated how recent is the favorable reception of the operation in France.

¹ Grenser, *loc. cit.*

² Wieland and Dubrisay, the French translators of Churchill.

M. Boinet, in 1867, read an essay¹ before the Academy of Medicine, strongly advocating it, and “reprobating the timidity of French surgeons who have so long recoiled before it.”

Up to July, 1868, Péan, of Paris, had had seven recoveries out of ten cases, and in 1870 and '71, out of thirty-two operations, twenty-six recoveries took place. In 1873, he wrote a work upon Hysterotomy for Fibroids and Fibro-Cysts, in which he claims seven recoveries for nine operations. Nothing could more surely mark the advance of the operation, as well as the rapidly increasing boldness and skill of French surgeons, than this announcement.

It is needless to point out the fact that to-day all opposition to the operation has disappeared, and that in every civilized country of the globe it stands among the proudest achievements of surgery.

In concluding the history of ovariectomy, it may be said that the conception of the operation in all its steps is over a hundred years old, and is of European origin; that for its accomplishment we are indebted to what M. Piorry once styled, “une audace Américaine,” which was supplied by Ephraim McDowell; and that many of the important improvements which have since been introduced, we owe to Great Britain. Pre-eminently an Anglo-American procedure, it has only within the last decade assumed its legitimate place in Germany and France, but in both countries it is not merely maintaining itself, but being improved and advanced towards perfection.

Varieties.—There are two forms of the operation: one, abdominal ovariectomy, in which the cyst is removed through the incised abdominal walls; the other, vaginal ovariectomy, in which a small cyst is removed by incision through the fornix vaginæ. Incomplete cases, or those in which only a portion of the sac is removed, have also been grouped under the first head, but very improperly so, for less than complete removal constitutes an entirely different operation, which is known as partial excision.

Dangers.—The dangers which attend it are numerous and grave. The following table, constructed by Dr. Peaslee upon the post-mortem evidence of 50 cases, will exhibit them at a glance:—

Peritonitis	12	Strangulation of intestine in	
Septicæmia	9	wound	1
Shock or collapse	7	Diarrhœa	1
Exhaustion	7	Erysipelas	1
Shock and septicæmia . . .	1	Tetanus	1
Hemorrhage	9	Ulceration through bladder	1
		Unknown	9

It will be seen from this table that peritonitis destroyed one-quarter of all who died from the operation; and septicæmia, or absorption of putrid material, one-sixth. After these causes followed those directly resulting from the depressing influence of the operation upon the nervous system.

¹ N. Y. Med. Record, July, 1867.

Dr. John Clay makes the following analysis of the causes of death in 150 fatal cases, reported in his tables :—

Shock or collapse	25
Hæmorrhage	24
Peritonitis	64
Phlebitis	1
Tetanus	2
Intestinal affections	6
Abscess	3
Chest diseases	4
Congestion of brain	1
Diabetes	1
Not stated	19
	<hr/> 150

That in these lists many cases of septicæmia ending in peritonitis are catalogued as peritonitis, I think is proved by the light which we now have on the subject. My own observation would lead me to put the causes of fatal issue after ovariectomy in the following order as to frequency and importance :—

Septicæmia ;
Peritonitis ;
Hæmorrhage ;
Shock.

The first of these is the great evil to be feared, and combined with the second causes more deaths than all the other causes added together and multiplied by ten.

Statistics.—So hard was the struggle of ovariectomy for existence, so vigorous and malign the attacks made against it by the leaders of professional opinion all over the world, and so delicate the position of those bold and enterprising men who in the United States and England still clung to its fortunes, that up to a very recent period it was necessary to deal fully with statistical evidence endorsing it. That time has now happily passed, ovariectomy now standing upon a basis every whit as firm as that of amputation of the leg or any other operation of general surgery. Then, too, a new era has dawned upon ovariectomy within the past five years which will almost surely greatly improve the statistics of the future. Antiseptic surgery applied to this operation has already accomplished a great deal; it will in all probability do in the future much more than it has done thus far.

Conditions favorable to the operation—

Clearness and certainty of diagnosis ;
Good constitutional condition ;
Patient being hopeful and desirous of operation ;
Paucilocular character of cyst ;

Absence of much solid matter in its structure ;

Abdominal walls not very thick ;

Absence of strong pelvic adhesions.

The possibility of error in diagnosis has been already sufficiently dwelt upon. The importance of clearly understanding the nature of the tumor cannot be over-estimated. The operator should, by repeated and most careful examinations, alone or with counsel, endeavor to determine all the features of the case, not merely the fact that a tumor exists, but that it is ovarian and not uterine, that pregnancy does not exist with it, that it is not cancerous, that its contents are fluid, and that the fluid felt is all ovarian and none of it abdominal. In two cases I have, in company with a number of others who consulted with me, been greatly deceived. In one case, when upon the point of operating upon a large, multilocular tumor, the patient lying on the table, I discovered the coexistence of pregnancy in the fifth month. In another, which I supposed to be a large ovarian tumor, upon cutting through the abdominal walls, an immense amount of fluid escaped, leaving for removal a solid tumor of the ovary not larger than the adult head. Cases are on record in which surgeons of great experience and skill have cut down upon uterine fibroids, cysts of the kidneys, the pregnant uterus, and other abdominal enlargements, under the impression that ovarian cysts existed, and instances have occurred in which abdominal section discovered no tumor of any kind, the operator having been deceived by tympanites.

As to the period at which the operation should be undertaken, there is, and probably always will be, a great deal of diversity of opinion. As the decision of this point will always involve a great deal of responsibility on the part of the operator, it will not be without interest to refer to the views of weighty authorities. Baker Brown operated quite early, as soon as the diagnosis was fully established, in order to avoid changes in the cyst and peritoneum. Peaslee and Tyler Smith waited for some degree of impairment of health and emaciation, as does Keith likewise. Wells operates when the patient cannot walk a mile without difficulty. Bryant does so when the tumor, by its size, inconveniences the patient and interferes with her domestic duties; while Greenhalgh postpones the operation as long as it is justifiable, in order to secure changes in the peritoneum which will render it less liable to traumatic peritonitis.

It appears to me that the general rule should be this : if a small cyst be discovered which is removable by the vagina, it should be removed as soon as possible, while one too large for this should be interfered with when it is evident that the patient is failing in strength, and becoming emaciated, depressed, and nervous. To this rule there are, however, marked exceptions. In a patient of calm, philosophic mind, who does not chafe at the knowledge that a tumor exists, delay is often advisable in the case of a tumor which, in a nervous, fretful, cowardly woman, who is

rendered almost insane by such knowledge, should be removed at a much earlier period.

The following table, constructed by Dr. J. Clay, of 299 cases in which the general health was ascertained, displays the important fact that even great emaciation does not produce a very unfavorable result :—

Class of cases.	Health good.	Health impaired.	Much emaciated.	Complicated with other disease.	Complicated with pregnancy.
Successful	21	17	47	21	2
Unsuccessful	21	25	46	27	2
Total	42	42	93	48	4

The mental state of the patient has so marked an influence on the result that operators agree that a depressed and apprehensive condition commonly produces an unfavorable issue.

The greater the amount of solid matter in an ovarian tumor, the more favorable will be the prognosis as to rate of growth and the more unfavorable as to cure.

The following is Dr. Clay's table in reference to the character of the tumor :—

Class of cases.	Monocystic.	Polycystic.	Solid.	Small.	Medium.	Large.
Successful	19	66	8	4	14	30
Unsuccessful	25	106	13	3	17	18
Total	44	172	21	7	31	48

The greater the thickness of the abdominal walls, the more extensive will be the surface which must unite to effect closure of the abdominal opening, and the greater the probability of suppuration occurring between the lips of the wound and pus pouring into the peritoneum.

The presence of adhesions to the abdominal viscera greatly complicates the case, but, as this can be determined only after abdominal section, its consideration will be postponed until that point in the description of the operation is reached.

Conditions unfavorable to the operation.—The following circumstances, although unfavorable to the operation, do not contraindicate it, unless they exist in the most exaggerated degree :—

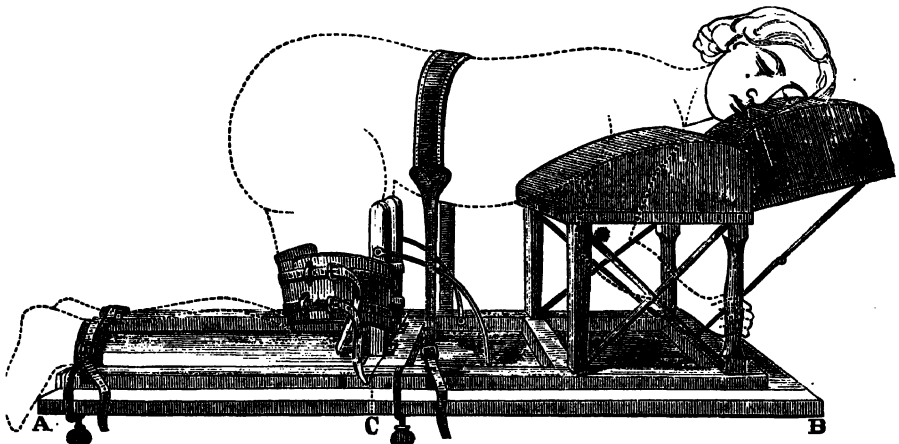
- Obscurity as to diagnosis;
- Great constitutional impairment;
- Gastric or intestinal disorder;
- Depression of spirits;
- Presence of much solid matter in tumor;

Extensive and firm adhesions to viscera;
 Complication with other diseases;
 Great thickness of abdominal walls.

Vaginal Ovariectomy.—In certain cases, rare ones I admit, in which a tumor not larger than the head of a child a year old falls down into Douglas's cul-de-sac, it will be possible to cut through the vagina, seize the sac, draw it down, ligate the pedicle, and fasten it by suture in the lips of the vaginal opening. If this can be done, a great deal of risk will be avoided, and the patient spared a lengthy period of suspense, with the prospect of a serious capital operation at the end. I will lay the steps of this operation before the reader by relating the first case in which it was resorted to by myself.

The patient having been etherized was placed in the knee-elbow position, and secured upon the apparatus of Dr. Bozeman. This apparatus not only completely fixes the patient in this position, by straps and braces, but makes the position perfectly comfortable for any length of time, and also favors the administration of an anæsthetic. It is shown in Fig. 256.

FIG. 256.



Bozeman's securing apparatus.

To prevent all possibility of the rectum falling into the line of incision, a rectal bougie was inserted for about five inches. Sims's speculum being introduced, and the perineum and posterior vaginal wall lifted, I caught the fornix vaginæ between the cervix and rectum with a tenaculum, drew it well down, and with a pair of long-handled scissors, one limb of which was placed against the rectum and the other against the cervix, cut into the peritoneum at one stroke.

The first step of the operation being accomplished, I proceeded to the second. The patient's position was changed to the dorsal decubitus, and passing my finger through the vaginal incision, I distinctly touched

the tumor, which had fallen into the pelvis, and fastened a tenaculum in its wall. With a small trocar I punctured, one after the other, three cysts, which gave vent to about six or eight ounces of fluid which looked precisely like vomited bile. Drawing upon the cyst, it then passed without difficulty into the vagina.

For the third step of the operation the position of the patient was again changed. She was now placed in Sims's position on the left side and his speculum introduced. Passing through the pedicle at its point of exit from the vaginal roof, a needle, armed with a strong, double silk ligature, I tied each half of the penetrated tissue and cut off the cyst and ligature. The cul-de-sac of Douglas was then sponged, the pedicle returned to the abdominal cavity, the incision in the vagina closed by one silver suture, and the patient put to bed.

The entire operation occupied thirty-five minutes, and presented no difficulties other than those slight ones incidental to ligature of a pedicle at some distance up the vagina.

The only variation which increased experience would prompt in this course would be the fixing of the ligated pedicle in the vaginal wound by silver suture, instead of returning it to the abdomen.

It is not my belief that the scope of this plan of performing ovariectomy will ever be very great; but I think that in cysts of small size, which are unattached, it will offer a valuable resource for the avoidance of years of mental suffering while the disease is progressing, and of the capital operation of abdominal ovariectomy in the end, with all its attendant dangers and uncertainties. Even in a doubtful case, vaginal ovariectomy may be resorted to as a tentative measure, which, in the event of failure from attachment of the cyst, would in all probability be recovered from.

I should urge upon any one who determines to essay it, not to trust to his general knowledge of the anatomy of the fornix vaginae and peritoneum, but to rehearse the first step of the operation upon the cadaver before attempting it upon his patient. There is often considerable space between the roof of the vagina and the floor of the peritoneum, and it usually requires two strokes of the scissors to penetrate the abdominal cavity. The first severs the vagina; then through this opening a tenaculum should be passed, and the peritoneum drawn down and opened. In thin women, if the fornix be well drawn down by a tenaculum, one stroke will often open the peritoneum.

This operation has been now performed a number of times with the best results by Gilmore, Hamilton, Goodell, and others. I feel sure that it has before it a future of usefulness for the following reasons. It is fully as easy of performance as abdominal ovariectomy; is evidently attended by much less danger; holds out to the patient the opportunity of avoiding many weary months of suspense in anticipation of that more grave pro-

cedure; is equally applicable to multilocular and to unilocular cysts; and gives abundant facility for securing the pedicle.

Abdominal Ovariectomy.—I have already expressed my belief that only a limited number of cases will be susceptible of the procedure just described. The great resource in ovarian tumors is the ordinary operation of ovariectomy by the abdomen.

Previous to the operation the patient should be put upon a tonic course. Generous diet, iron, quinine, fresh air, cheerful surroundings, and gentle exercise should, unless impracticable from some peculiarity of the case, be prescribed. A visit to the country or some quiet watering place will prove of great advantage. Above all things, the mind of the patient should be made calm and cheerful, and every hope as to the result of the operation encouraged. After a candid statement of the chances of success has been rendered her as material upon which to base her determination to accept or reject the operation, no doubt ought thenceforth to be expressed as to the result by physician or friends.

The operation should be performed in a locality where the air is pure and salubrious—never, if it can be avoided, in the wards of a crowded hospital, and if a choice be offered, in the country rather than the city. The day selected should be clear, and neither very hot nor very cold. If the weather be cool, the temperature of the apartment should be kept at from seventy-eight to eighty degrees. A thoroughly experienced nurse should be in readiness to take charge of the patient.

After the operation it is essential that the bowels should be kept constipated for a week or ten days. That this may be done without inconvenience they should be empty at the time of operation. To effect this, during the week preceding it they should be acted upon by a gentle laxative every second day, and the patient kept for two days previous to the operation upon animal broths, beef-tea, milk, and gruels like those of farina or Indian meal.

Five hours before operation I am in the habit of giving from twelve to fifteen grains of quinine with a quarter of a grain of morphia. The skin should be put into good condition by warm baths employed daily for a week or more, and its temperature kept equable during the operation by a flannel wrapper and drawers. As the time for operation arrives, the bladder should be carefully evacuated, the patient anæsthetized, and laid upon her back upon a table of suitable height and strength, which is covered by folded counterpanes or blankets, and placed before a window affording a good light.

What the verdict of the future will be in reference to the full application of the antiseptic method to ovariectomy, no one can now say. It is very possible that the use of the spray may be discarded; it is highly probable that all the other steps of the procedure which so surely secure perfect cleanliness and prevent contamination by disease-germs will live as

long as surgery does. With our present lights, however, no man is justified in casting aside a method which promises so much of security, and has already produced such excellent results. Everything should therefore be prepared for full practice of the Listerian plan.

The operator will require five assistants, one to administer the anæsthetic, one to stand opposite to him and aid in manipulating the tumor and abdominal wall, one to take charge of the instruments, one to apply ligatures, the actual cautery, etc., and a fifth to take charge of the atomizer. The nurse who is to take charge of the patient may look after the cleansing and supply of clean sponges wrung out of carbolized water.

The Operation.—Although this operation has of late years been so fully discussed and so free an interchange of sentiment concerning it has been afforded, there is not one point connected with it upon which operators are agreed. The extent of incision, management of pedicle, closure of wound, and the other steps which will be alluded to, are still subjects upon which great variety of opinion exists. I shall avoid discussion, and hoping to be pardoned for any appearance of dogmatism which may result from so doing, give such a description as will, according to my view, best meet the requirements of practice.

The steps of the operation are these :—

- 1st. Incision through abdominal walls ;
- 2d. Tapping tumor ;
- 3d. Removal of the sac ;
- 4th. Securing the pedicle ;
- 5th. Cleansing the peritoneum ;
- 6th. Establishing drainage, if necessary ;
- 7th. Closing abdominal wound ;
- 8th. Applying antiseptic dressing.

The incision is made by a bistoury held by the operator, who stands at the right side of the patient. It should pass directly through the linea alba, and should extend from a point at a varying distance below the navel to one a little above the symphysis pubis. Passing through the skin and adipose tissue, layer by layer, it is continued until the operator sees the fibrous sheath of the recti muscles. An inexperienced operator may take this for the peritoneum. If any doubt exist, it should not be incised until exposure to the air and pressure by forceps, fingers, or sponges, have checked the venous flow occurring from the vessels exposed by the abdominal incision. Then the fibrous structure should be caught by a tenaculum, snipped with scissors, and a grooved director passed under it, upon which it may be slit. If this expose the belly of one of the recti, it will be evident that the linea alba has not been struck by the incision. To reach it, the director should be pushed under the sheath across the muscle, and it will be arrested at the linea, where the incision should be made. All hemorrhage having ceased, the parietal peritoneum should be lifted by

the tenaculum, snipped, and slit upon the director for the length of the incision.

During this part of the operation small vessels may pour forth blood quite freely. It is not necessary to ligate them, temporary compression by hemostatic forceps usually controlling their flow perfectly.

It may be supposed that no difficulty could arise in cutting through the abdominal walls, but this is not so. Operators will sometimes commit most serious errors even here. In two cases, one of which occurred to myself, and the other to a very skilful operator of this city, the incision was carried only down to the parietal peritoneum, when this was stripped away from the muscles under the impression that it was an attached cyst wall. In other cases operators have become confused in searching for the linea alba, and, in others still, the incision which should open only the abdomen lays open the cyst itself, and allows its contents to flow away prematurely. By cutting at first only through skin and areolar tissue, and then applying the tenaculum to all doubtful tissues, these difficulties may be to a great extent avoided. It is hazardous to open the peritoneum by the knife, and always wise to lift it by the tenaculum, snip it with scissors, and slit it up upon a director. Sometimes a loop of intestine may be found over the anterior face of the tumor, as happened in one of Mr. Baker Brown's cases, where it would have been incised had the operator not slit the peritoneum upon a director with scissors. In one case, published by Dr. McLane, of Troy, the bladder lay over the tumor, and was drawn up towards the umbilicus so far that both its walls were cut through by the abdominal section.

As a rule, the shorter the abdominal incision the better for the after progress of the case.

Mr. Brown has laid down, in reference to the abdominal section, this important rule: it should always be regarded originally as an explorative incision. If any condition contraindicating the removal of the sac be found to exist, it may then be closed without exposure of the patient to great danger, while, if it be found advisable to enlarge it to proceed, this may be done to any necessary extent. Mr. Wells has removed one sac by an incision of one inch and a half, and rarely resorts to one of over five inches. On the other hand, Dr. Clay, whose favorable statistics have been alluded to, prefers the long incision. The great dread which has always been entertained of cutting into and exposing the peritoneum, lends a degree of fascination to the short incision. But when it is borne in mind that, for want of a sufficiently free incision, a tumor is often slowly and clumsily removed, bleeding vessels not detached, and an unclean peritoneum closed up in place of a clean one, it will be recognized that an operator may err in this direction as well as in the other.

The results of Mr. Wells, as embodied in the following table, prove, however, that short incisions are greatly to be preferred to long ones.

	No. of cases.	Recoveries.	Deaths.	Mortality.
Not exceeding 6 in.,	440	337	103	23.4 per cent.
Exceeding 6 in.,	60	36	24	40. " "

It is equally worthy of note that the same surgeon operated on 17 cases by an incision of 3 inches, and lost 23.53 per cent., and on 203 cases by an incision of 5 inches, and lost 19.7 per cent.

The most rational deduction to be drawn from these facts is this: that the shorter the incision by which the sac can be removed "*tuto, cito, et jucunde*," the better for prognosis. The effort to remove the sac, however, through an opening so small as to involve delay, uncertainty, and inefficient manipulation gives the patient a poorer prospect for recovery than the making of a longer incision would offer.

The shining wall of the cyst, covered by visceral peritoneum, being now under the fingers and eyes of the operator, he has an opportunity of verifying his diagnosis by palpation, visual examination, and removal of fluid by a very small trocar and canula or by the needle of the hypodermic syringe. Should connection with the uterus be suspected, before proceeding further its relations to this organ should be determined by passing the uterine sound, and rotating the uterus while two fingers are passed through the abdominal wound down to the fundus uteri.

Before this, however, the operator may be checked in his progress by discovering that he is not in contact with the cyst wall, although the peritoneum be opened. In place of the smooth, shining wall of the cyst, he discovers a vascular membrane containing large vessels, which spreads over the tumor like an apron. To one who has never seen this covering it will prove very perplexing. It consists of the peritoneal walls or roof of the broad ligaments which have been spread out by the growing tumor and have undergone great hypertrophy. Tumors thus surrounded have, according to my experience, broad and short pedicles, and their extirpation will be very difficult unless the valuable method advised by Dr. Miner, of Buffalo, be adopted. It consists in cutting through the envelope of the cyst, avoiding, as far as possible, the opening of large vessels, introducing the fingers, and enucleating the tumor.¹ The sac which is left should then be opened, thoroughly cleansed, touched all over its oozing surface with solution of persulphate of iron, and, if large, tied around a drainage tube.

Should any doubt exist in the mind of the operator whether the structure which he sees through the incision is really the cyst wall or the peritoneum covering it, he may endeavor to pass a finger thoroughly washed in

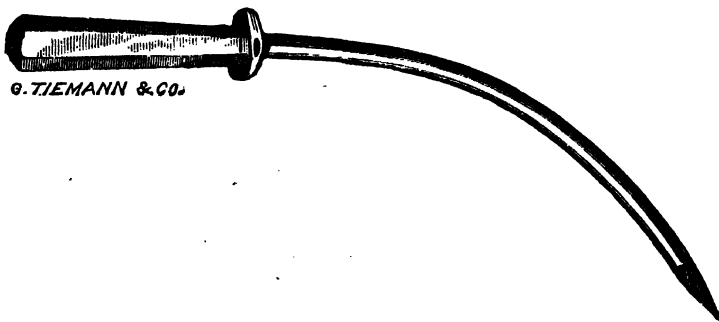
¹ I have resorted to this method a great many times, with good results, in cases which would have proved unmanageable by other means. It appears to me to be one of the most valuable of all the contributions to ovariectomy which have emanated from this country.

carbolyzed water between the cyst and peritoneum, or a steel sound may be gently swept around if it be possible.

Tapping.—Before tapping it is my habit to turn the patient on the side towards the operator, whose special attention at this moment should be directed to two objects—one preventing the escape of even one drop of fluid into the peritoneal cavity, the other the avoidance, as far as possible, of the introduction of his hands or fingers into it. Turning the patient on the side greatly facilitates the second of these, and by no means increases the difficulties of the first. The assistant opposite the operator, now standing at the back of the patient, steadies her body with his right hand, while with his left he presses a soft, carbolyzed towel, or sponge, firmly against the abdominal wall just below the incision, so as to prevent ingress of fluid to the peritoneal-cavity. The operator should now thoroughly cover the raw lips of the wound with carbolyzed vaseline, or some other unctuous substance, to prevent absorption of the colloid, perhaps the decomposing, purulent fluid, of the sac, which is now to be tapped and withdrawn.

With a long curved trocar and canula, such as that shown in Fig. 257, the fluid of the sac is now allowed to flow away if it be not too tenacious to do so.

FIG. 257.



Emmet's trocar and canula for tapping cysts.

I have cast aside entirely, and would advise others to do so, the cumbersome attachments to trocars intended to carry off the fluid of the sac without soiling the surroundings of the patient. If a large wash-tub be placed upon the floor, and a little skill and care be displayed by the operator, no necessity for them will be found to exist.

Let us suppose that the sac contents flow away easily and freely; the operator should wait until the visible portion of the sac protrudes a little through the abdominal opening; then he should fix a tenaculum in it and draw the opening in which rests the canula, just beyond the abdominal

wound. In a few minutes a second tenaculum should be fixed in the sac, and very soon it will protrude decidedly. As soon as it is outside the abdomen, the canula may be with advantage withdrawn, and a free opening made into the sac by a pair of scissors, to prevent the waste of time which would attend its slow evacuation through the canula.

If one sac be emptied and another be felt, the operator may introduce the trocar into the canula, turn this obliquely, and plunge it into the remaining cyst or cysts; or he may, and this is usually safer and better, pass one or two fingers, or the entire hand, into the main sac and rupture the remaining ones in this way and allow their contents to flow out. In doing this the hand should never be passed into the peritoneal cavity, and great care should be observed not to break any remaining cyst so as to let it communicate with that cavity. This manœuvre is a very important and effectual one, and withal a very safe one, since the cyst walls protect the peritoneal cavity thoroughly. It is far safer than the plan of plunging a trocar and canula blindly about in search of cysts, and than that of passing the hand into the peritoneum to find them.

While the fluid is pouring out, compression of the abdominal walls against the tumor should be made by an assistant, who places one hand on each side of the abdominal incision, and the sac should be kept from slipping into the abdomen by strong forceps made to grasp its lips, if an ordinary canula be employed.

Suppose, however, that the fluid of the cyst is semi-solid colloid, that numerous very small cysts exist, or that a large amount of solid material prevents evacuation of the tumor by trocar; what then is to be done? Passing two large and strong tenacula into the tumor at the extreme upper and lower extremities of the abdominal wound, and holding it firmly against it, the surface of the tumor between these tenacula should be cut through, and one finger, then two, and then the whole hand introduced, breaking up as it goes little cysts, and at once evacuating their contents. When the hand has well entered the tumor, a species of "conjoined manipulation," one hand on the abdomen and the other in the tumor, will serve to reveal the presence of all cysts not yet evacuated.

In this way immense tumors may be delivered without introducing the hand into the peritoneal cavity, without making a long abdominal incision, and without allowing the escape of sac contents within the abdomen.

Removal of the Sac.—The sac, being now drawn out by the tooth forceps, tenacula, or pincers, which have been fixed in it to prevent its escape into the abdomen, is seized by the fingers of the operator and gently drawn forth through the incision. This is the time for breaking adhesions, and this is best done, as a rule, by steady traction upon the sac. In the large majority of cases traction, steady and even powerful traction, upon the sac is the best, most rapid, and safest method of severing attachments. Of course, this must not be rash or intemperate in degree,

for by that serious damage might be done; but it should be so firm and decided as to break all ordinary attachments.

If an adhesion which resists the efforts thus made to rupture the attachments hold the sac in the abdomen, this should be fully exposed, and severed by detaching it from the cyst wall by the fingers, which will now reach it readily; by the actual cautery, as suggested by Mr. Brown, if it be long enough to avoid cauterization of the abdominal wall; by scissors, if a cutting instrument must be used; or by a small *écraseur*, if it can be applied. No rule can be given as to the best method, for each case will require the plan specially adapted to its peculiar features. This maxim must be constantly borne in mind—that plan is best which severs attachments without injuring viscera or leaving bloodvessels open, for these are the two evils to be feared. If a flow of blood follow the severance of an adhesion, the bleeding vessel should be exposed and ligated or touched with the actual cautery so lightly as not to create a slough.

By the means recommended, adhesions may generally be severed without the application of ligatures, but now and then this is necessary. If it be so, silk should be unhesitatingly employed as a method of ligation. Metallic ligatures are unwieldy and unreliable, and none of the other animal ligatures compare favorably with silk. In some cases the cyst adheres so strongly to some viscus that it cannot be separated. Under these circumstances a portion of the cyst wall should be cut out and allowed to remain upon the surface to which it so pertinaciously clings. M. Boinet points out the propriety of removing the secreting surface of such a piece before leaving it.

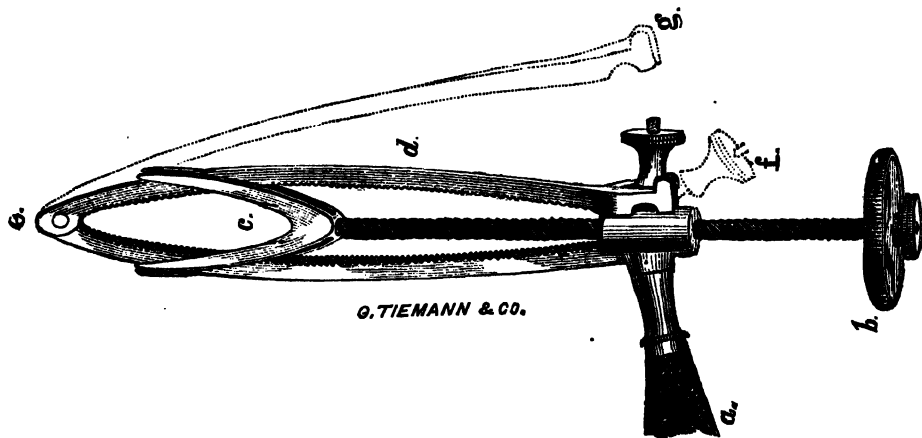
Sometimes instead of adhesions here and there the cyst is found universally attached over the pelvis, and the operator sees cause to fear lest the removal of the whole cyst may prove impracticable. This condition of things may be dealt with in one of two ways. The operator may strip the envelopes of the sac away from it about three inches above the attached surface and enucleate its lower segment; or if he find this impossible, or deem it to be very hazardous on account of hemorrhage, he may pass into the extremity of the sac a glass drainage tube, tie the sac firmly around this, and fixing both sac and tube between the lips of the abdominal wound drain it and inject with carbolized fluid.

There are little manœuvres which experience will teach the operator which will greatly assist in removal of the sac from the abdomen when difficulties present themselves. One of these, which I learned of Mr. Spencer Wells, consists in ignoring the attachments at the upper part of the sac, seizing its lowest, inner portion, pulling this out through its mouth, and thus completely inverting it. Another consists in ligating the tumor, when much solid matter exists at its lower extremity, before complete emptying of it, turning it over, and delivering the pelvic extremity first. A third plan is applicable when the upper portion of the tumor is fluid,

and that below the umbilicus solid, and consists in passing the long trocar through the solid portion obliquely upwards, emptying the upper sac, pulling this down and out first, and then dragging out the solid portion near the pelvis. By adopting these methods in suitable cases, it is surprising to see through how short an incision a colossal and semi-solid tumor may be extracted. Very recently I removed one in the Woman's Hospital weighing over sixty pounds, through an opening of less than five inches.

The tumor being freed from attachments is now drawn forth, and the pedicle seized in the fingers. At this point there is usually a delay caused by the time required by the operator for determination as to the plan which will be best adapted to securing the pedicle. There is often, too, some discussion upon this point, for no operator should be wedded to any single plan which he adopts in all cases. If the sac be left attached to

FIG. 258.



Dawson's temporary clamp.

the pedicle during this time, it is greatly in the way, drags heavily, soils the clothing, and usually forces entrance of its contents into the abdomen. I have been in the habit of rapidly encircling the mass some inches from the pedicle with a strong ligature, cutting off the sac, and then at leisure examining the pedicle. Dr. B. F. Dawson has devised for this purpose the temporary clamp shown in Fig. 258. By this the vessels of the pedicle are secured, and this part compressed circularly instead of laterally, while it is secured by the means which are to be permanent.

Securing the Pedicle.—This, which constitutes one of the most important steps of the operation, is at times easily and satisfactorily accomplished, while at others it is invested with great difficulties. Unless the pedicle be excessively short, the sac may be drawn outside of the abdomen and its pedicle grasped by the fingers. When very short it has to be manipu-

lated in the abdomen. It may be managed after one of the following methods, that one being selected which best meets the requirements of the particular case.

1st. The pedicle may be constricted by a clamp and held outside of the abdominal cavity.

2d. The pedicle may be securely ligated and held between the lips of the wound by pins or sutures.

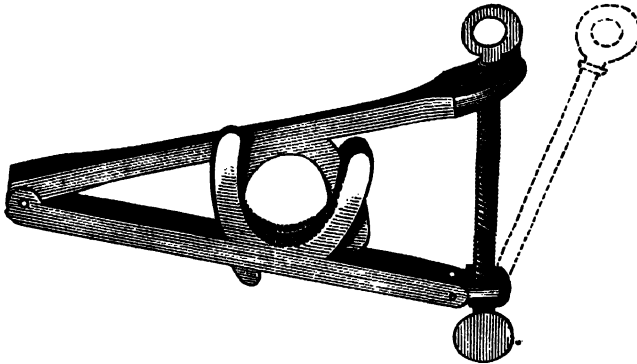
3d. The pedicle may be transfixed by double ligatures, which being cut short, it is dropped into the pelvic cavity.

4th. The tumor may be enucleated.

5th. The pedicle may be constricted by a temporary clamp and severed by the actual cautery.

A large number of other methods have been advised and practised, and to those interested in the matter, I would recommend the work of Dr. Peaslee on Ovarian Tumors where they are considered at length. I mention here only those which appear to me deserving of special consideration and unquestionable reliance.

FIG. 259.



Thomas's clamp.

The prevention of hemorrhage by the ligature and clamp is evidently identical in principle. The clamp, however, has the advantage of being simpler and more easily applied. The clamp shown in Fig. 259 is that which I invariably employ. It appears to me to present all the advantages and few of the evils which attach to others.

It is thus employed: the pedicle or neck of the tumor being held in the fingers; the clamp, Fig. 259, is adjusted so that one limb passes over one, and the other over the other side of it; the two branches are then closely approximated so as to obliterate the vessels, and the sac is amputated above this by a bistoury. The clamp is then laid flat upon the abdomen and the incision closed.

When the ligature is employed in the extra-peritoneal method, the sac

is amputated and the stump placed between the lips of the wound and transfixed by large pins, or the sutures which close this part of the incision.

Dr. Tyler Smith was instrumental in rendering popular a method which was practised, according to Dr. Peaslee, as long ago as 1829, by Dr. Rogers, and afterwards by Dr. Billington, of this city. It consists in ligating the stump, cutting both ligature and pedicle as short as possible, returning them to the abdomen, and closing the abdominal incision. A great deal of prejudice has existed against this return of the pedicle. By theoretical reasoning it is true that the practice can be made to appear very objectionable, but it is not theory which should decide us in reference to so grave a matter; the results of practice should outweigh all theory, and no one should yield aught to mere feeling. This unwarrantable prejudice against the leaving of silk in the peritoneum, for so I regard it, has been strengthened by the report of 34 cases of ovariectomy by Spencer Wells; of these, 4 were treated by return of ligature to the abdomen, and all died; 30 were treated by clamp, and all recovered. Peaslee, whose statistics were 17 recoveries out of 26 operations; Tyler Smith, who reported 14 successes in 17 operations; and Bradford, who saved 28 out of 31 cases, all employed this plan universally. I confess that I once shared in the prejudice to which I have made allusion, but experience has caused me to change my mind with regard to it. In 1878 Mr. Knowsley Thornton, of London, whose success as an ovariectomist entitles his opinion to great weight, reported very strongly in favor of the silk ligature and return of the pedicle.

An objection to the use of the ligature cut short and returned to the peritoneal cavity which has been raised upon theoretical grounds is, that gangrene of the portion of the stump distal to the ligature was likely to occur, and prove a source of septicæmia. Spiegelberg and Waldeyer have, however, proved that after the application of a ligature upon the horns of the uterus the portions of tissue distal to them do not become gangrenous, but are encapsulated by effused lymph.

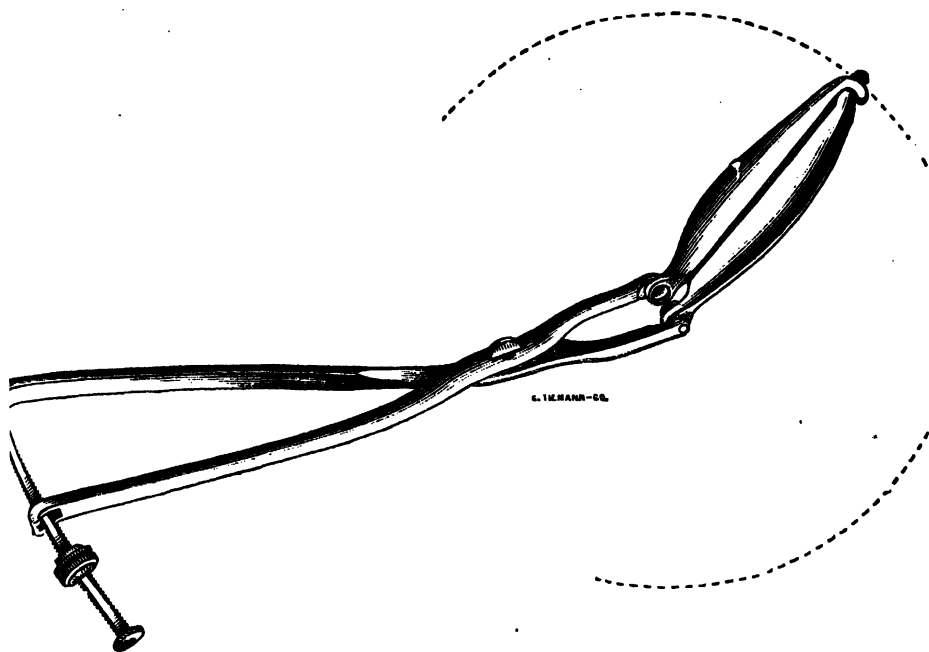
Kœberlé, of Strasbourg, employed the clamp when the pedicle was long; but when short, he compressed the stump by a species of constrictor which tightens a metallic wire that surrounds the pedicle.

Enucleation will never prove applicable to a large number of cases, for where a pedicle can be treated by any of the methods thus far mentioned, it will offer no advantages. Where, however, there is no pedicle, it presents itself as a most valuable resource, and comes into use in a class of cases to which no other plan is applicable.

The most remarkable results have attended the use of the actual cautery in the treatment of the pedicle, combined with the antiseptic method in the hands of Mr. Thomas Keith, of Edinburgh. Out of his last seventy ovariectomies, he has not had a death!

No rule can be given with reference to a choice between all these methods other than this: when the pedicle is long and slender, it does not appear to matter very much which plan is selected, for all have yielded and are daily yielding excellent results; but when it is very short, the external does not promise nearly so well as the internal method of managing the stump.

FIG. 260.



Storer's clamp-shield.

As to the special cases for applying the different plans, the following suggestions, not rules, may be of service:—

a. The clamp is applicable to long pedicles, requiring powerful ligation, and presenting a large amount of tissue for suppuration and decay.

b. Ligation and return is applicable to tumors with pedicles too short for treatment by the clamp, and to slender pedicles.

c. Enucleation gives a method of removal of tumors which have no pedicles.

d. Since the experience of Mr. Keith, the use of the actual cautery should be again fully tried, for its utility may now be considered beyond question. Where it is employed deep in the pelvis, Storer's clamp-shield, Fig. 260, is an excellent adjuvant for prevention of hemorrhage during its use, and a good protection to the surrounding parts.

The statement just made as to its being immaterial whether the pedicle

is returned or not, in ordinary cases, is based upon the comparative results of those who do not return it, with those of other operators who do.

The following analysis of a large number of cases is given with reference to this point by Dr. J. Clay :—

Class of cases.	Stated left within the abdomen.	Inferred left within the abdomen.	Kept without by various methods.	Tied in two or more portions.	Simply ligatured.	Stitched in wound.	Ecraseur used to divide it.
Successful . .	113	76	20	122	22	3	2
Unsuccessful	58	97	25	57	26	3	1
Total . . .	171	173	45	179	48	6	3

Upon theoretical grounds it would appear that parturition in the future would be much less unfavorably affected after the performance of ovariectomy with return of the pedicle to the abdominal cavity than after the same operation, the clamp being employed. Statistical evidence upon the subject is wanting. Dr. Walter F. Atlee¹ relates a case where death occurred to mother and child from powerless labor, of which he says :—

“I think myself that the difficulty in this case arose from the irregularity of the contractions in a deformed womb. The left horn being fast to the abdominal wall at the lower end of the old cicatrix, which was just above the pubis, the womb, as it developed around the child, must have done so in a very different way from what occurs in ordinary cases. As it is, I have thought it well to report the case as bearing upon the question of the proper mode of securing the pedicle, when very short, in ovariectomy.”

Before proceeding to the next step of the operation, the remaining ovary should always be carefully examined as to the existence of disease. Upon the removal of a large ovarian cyst, it is very common to find very small cysts disseminated throughout the other ovary. If any of these have obtained considerable size, it is advisable that this should be removed. But if they be too small to call for this course, the matter may be compromised by puncture of them with a needle. Pippingskoeld,² of Helsingford, Finland, advises that the small cysts should be punctured and their walls rapidly but efficiently cauterized with a pointed actual cautery. He declares that he has resorted to this plan in many cases and with uniformly good results.

Cleansing the Peritoneum.—The sac having been removed and hemorrhage checked, all fluids contained in the peritoneal cavity should be carefully removed by soft sponges squeezed out of warm, carbolized water. Not only the intestines and abdominal walls, but especially the pelvis, should be completely and thoroughly cleansed. This is a point of great

¹ Amer. Journ. Med. Sci., April, 1880, p. 394.

² Am. Journ. Obstetrics, April, 1880.

importance, and may decide the issue of the case. Every particle of fluid left may undergo decomposition, and expose to the great dangers of septicæmia and peritonitis.

Establishing Drainage.—No one familiar with ovariectomy will to-day doubt the assertion that the two factors which prove most fatal after it, septicæmia and peritonitis, are both in great degree due to the retention of putrescent materials within the peritoneal cavity. These materials may have escaped from the cyst during or before the operation, may consist of blood or serum oozing from vessels while the operation proceeds, or some hours after it has ended, or arise from emptying of pus into the peritoneum from inflammatory action. The importance of not only preventing the entrance of such elements into the peritoneum, and of removing them before closing the abdominal opening, but also of giving them free vent during the period of convalescence has attracted the attention of many ovariectomists. Peaslee introduced the plan of leaving a cloth tent in the lower angle of the wound in order to facilitate drainage in case of the development of septicæmia. Kœberlé not only inserted channels of metal through the abdomen, but even opened through the cul-de-sac of Douglas and inserted tubes, so as to drain per vaginam, and Sims more recently has urged this plan as one very greatly calculated to diminish the liability to these conditions.

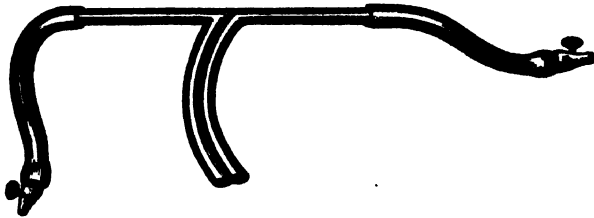
The removal of the cloth tent, fixed between the lips of the wound by congealed blood, is often difficult and painful, and the passage of a catheter or other tube down into Douglas's sac, the most dependent part of the peritoneum, is not rarely impossible after a slight effusion of lymph has occurred.

Drainage per vaginam by means of tubes passed up into the peritoneum is, I think, calculated to increase the dangers of ovariectomy, by opening a way for putrid fluids from the peritoneum into the pelvic cellular tissue. I have practised it twice and seen it adopted many times, and it is upon the evil results thus far observed at the bedside that I base my estimate of its value.

For the past fifteen years, whenever, from the remaining of a portion of the sac in the pelvis, or from escape of fluids into the pelvic peritoneum, drainage has seemed advisable, I have, until recently, employed for this purpose a curved glass tube, which entered and rested in Douglas's pouch. This was kept closed by a cork or by a roll of carbolyzed cotton, and through it the pelvic cavity was syringed out with carbolyzed water, carried in by a catheter if symptoms of septicæmia developed. Since the use of antiseptic dressings I have, however, discarded this, and now employ a double tube with lateral branches, which pass out through the antiseptic dressings. This renders it unnecessary to disturb it when washing out the abdominal cavity, and the rubber tubing with stopcocks arranged at the extremities of the lateral arms enables us to exclude air very perfectly. The two halves of the tube do not communicate. As it is forced in through

one lateral branch, the fluid runs out at its lowest extremity, rises in the cavity, and escapes through the other tube. Obstructing the escape-tube will more completely fill the cavity with fluid, if this be considered desirable.

FIG. 261.



Thomas's drainage tube of metal, vulcanite, or glass.

Closing the Wound.—This is accomplished by two sets of sutures, the deep and superficial. The first, composed of silver, may be passed in the following manner: a thread of silver wire is passed at each of its extremities through a long and stout, straight needle. One of the needles, being grasped by strong needle-forceps, is passed through the peritoneum of one abdominal flap near the edge of the incision and made to emerge through the skin about an inch from the edge. Then the other needle is seized and passed through the other side. The suture is then secured by twisting. These deep sutures, placed at the distance of half an inch apart, will bring the whole incision into contact from the peritoneum to the skin, and favor healing by first intention.

A much better method is to pass through both walls of the abdomen a long needle with fixed handle and an eye near its point armed with a short loop of silk as recommended by Peaslee. Into this loop or into the eye of the needle a bit of metallic wire is fitted and immediately drawn into place.

Besides these, superficial sutures or pins like those employed for harelip should be used, which pass through the skin and areolar tissue, but do not involve the peritoneum. Around the pins thread is wrapped in figure of 8.

The operation having been performed under Lister's method throughout, the wound is now covered with his antiseptic dressing, which is secured in place by a heavy covering of carbolized cotton, and this again by a firm bandage. Then the patient should be removed from the table to her bed, given a dose of opium or one of its salts, and covered up warmly, with warmth to the feet even in hot weather. It is well to move the patient now to another room. The temperature of the operating room should have been about 75°, that of the chamber in which she is to remain should be less. This apartment should be kept at a temperature of 65° to 68° Fabr., and thorough ventilation should be secured, not by the unpleasant method of admitting cold, damp, and chilling air, but by the more philosophical

one of causing the rapid escape of foul air. This can best be done by lighting a fire in the chimney, by immediate removal of offensive substances, and by general cleanliness.

A quiet, attentive nurse who understands the use of the catheter should be in attendance day and night.

The effects of the operation upon the nervous system should be guarded against by the means just enumerated as general rules of management, and by administration of stimulants, as brandy or champagne, if the strength appear to be failing. In addition, the most complete quietude of mind and body should be afforded. All conversation and noise should be interdicted, the patient's hopefulness excited and fostered, and all muscular effort avoided. For four or five days the catheter should be employed for evacuating the bladder, and the bowels be kept constipated by opium for ten days or a fortnight. The avoidance of cathartics during this time is essential to safety, a neglect of this precaution often producing a fatal issue. Some years ago I was present at the removal of an immense cystic sarcoma by the late Dr. John O'Reilly, who made an incision extending from the xiphoid cartilage to the symphysis, and after detaching many adhesions extirpated the mass. The patient did perfectly well for a week, and was in a fair way to recover. She was, however, very urgent that her bowels should be moved, and the doctor refusing to comply with her solicitations, she took surreptitiously a full dose of bitartrate of potash. This acted as a hydragogue cathartic, but its action was not limited as it usually is. Diarrhœa, and soon dysentery, supervened and destroyed the patient's life.

After the seventh or eighth day, tympanites may call for an alvine evacuation, which can be effected by an ordinary injection of soapsuds or an infusion of linseed, chamomile, or fennel.

The patient should be kept quiet and free from pain by opium, given either by the mouth or rectum, so soon as she has rallied from the anæsthetic; or, in case of suffering, by the hypodermic method. Her nourishment should consist of milk, beef-juice, or gruel with milk. Even these digestible substances should be given in small amounts and with caution. Should there be a tendency to nausea and vomiting, pieces of ice may be held in the mouth or swallowed, and if these symptoms be so severe as to threaten rupture of the sutures, the hypodermic use of morphia should be resorted to.

Should any marked irritability of the stomach exist, all efforts at giving nutriment by that viscus should at once be stopped, and the patient be nourished entirely by the rectum. From two to three ounces of mashed beef, bullock's blood, or strong meat essences, should be given every two hours. With this brandy or, as Mr. Thornton advises, port wine may be given, and if necessary the tincture of opium. I have, in many cases, had patients nourished almost entirely in this way from the time of operation until ten days' convalescence have been passed.

The evils which are chiefly to be feared as sequels of the operation are, within the first twenty-four hours, hemorrhage; from second to fourth day,

peritonitis; from completion of operation to third or fourth day, nervous prostration; and from fourth to fourteenth day, septicæmia.

Should hemorrhage be ascertained to be taking place, all dressings should be at once removed, and the stump, if out of the abdomen, securely ligated or touched with the actual cautery. If it have been returned to the abdominal cavity, there is but one course available, that is, opening the wound, ligating the bleeding vessel, and cleansing the peritoneal cavity. Such a necessity is very unfortunate, yet this course holds out the only prospect of success. Last year I had twice to resort to this alternative, and both my patients recovered.

Septicæmia, which is now admitted to be the most frequent cause of death after ovariectomy, is, when once fully established, a most dangerous state. It is ushered in by dizziness; excessive muscular prostration; anorexia; great pallor; high temperature; small, rapid, and very weak pulse; sometimes a low delirium; dry tongue; and a sweetish odor of the breath. It is this condition which is so often alluded to as a "typhoid state" after operations, and one cannot but suspect that many, if not most, of those cases quoted in Dr. Clay's tables as shock or collapse, occurring as late as the fifth, sixth, seventh, and tenth days, were really instances of this affection. In one of my fatal cases, the patient was doing quite well on the evening of the seventh day. On the morning of the eighth I was struck by her wild, maniacal expression and cadaverous countenance; upon examination I found all the symptoms of septicæmia present, and she very soon succumbed to them.

The gravity of this sequel has rendered all operators anxious to possess the means to avoid or remedy it. Most of the methods of avoidance have been already stated; the importance of the subject will, however, excuse my again referring to them as—

- 1st. Completely cleansing the peritoneum;
- 2d. Checking hemorrhage before closing the abdominal wound;
- 3d. Establishing drainage, whenever fluids are likely to collect in the peritoneum;
- 4th. Adhering strictly to Lister's method.

Septicæmia, being the result, first, of the decomposition, and, second, of the absorption, of fluids in the peritoneum, is not likely to occur for several days, but it may take place two or three weeks after the operation.

The development of peritonitis and septicæmia should be carefully looked for. All the rational and physical signs which mark them should be constantly investigated, and their inception be met by appropriate therapeutic means. A written record of pulse-rate, temperature, and number of respirations should be systematically kept, an entry being made as to the three conditions at least as often as every six or eight hours. In case a competent assistant remain at the bedside, it may be done more frequently, but never often enough to annoy or harass the patient.

After the lapse of twelve hours, in consequence of the anæsthetic, the

FIG. 263.

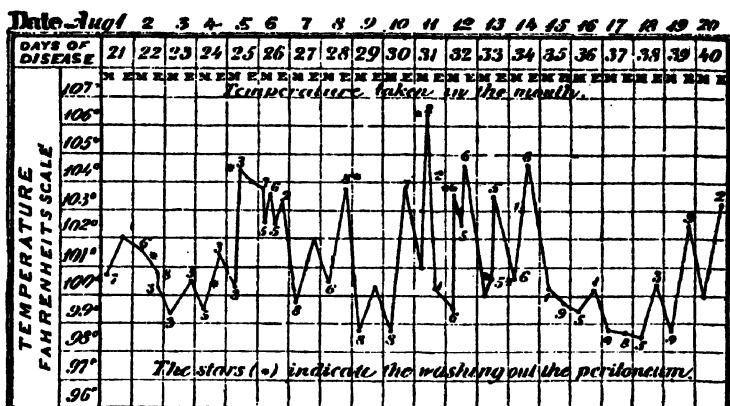
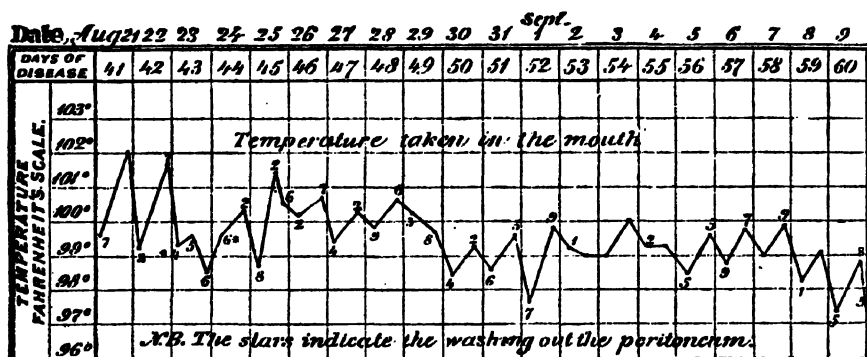


FIG. 264.



Let no one suppose that septicæmia once established becomes irremediable. Experience disproves this; it is the prolongation of exposure to absorption of septic elements that constitutes the great danger of the condition.

This method of meeting in an efficient and satisfactory manner the most fruitful source of danger after ovariotomy, I regard as second in importance to no other improvement which has been introduced since the discovery of the operation itself. It emanated from Dr. E. R. Peaslee, and has even now, I think, not assumed its legitimate position in the scale of importance.

It is a matter of moment, in reference to this method, to know how an experience of fifteen years in its use should have affected its originator towards it. In an article written in 1870, he expressed the following conclusions:—

"1. Intra-peritoneal injections of water, with the addition of liq. sodæ chlorinat. or carbolic acid, as before explained, are entirely safe after ovariotomy in the conditions requiring them.

"2. They should be used with a *curative* intention in all cases of septicæmia already developed, and in all cases for *prevention* where it is feared, from the presence already of a fluid in the peritoneal cavity, whose decomposition will produce it.

"3. Thus used, they will diminish the percentage of deaths from septicæmia after ovariectomy from one-sixth (seventeen and eleven-seventeenths per cent.) of all who die after it, to one-thirty-sixth (two and sixteen-seventeenths per cent.); and increase the average success of ovariectomy from seventy to seventy-four or seventy-five per cent.

"4. Intra-peritoneal injections are never to be thought of except for the purpose of removing a fluid already in the peritoneal cavity, which either has, or assuredly will have, produced septicæmia.

"5. A tent may be inserted for two to four days at the lower end of the incision, with entire safety, in any case of ovariectomy where the accumulation of such fluid is apprehended.

"6. Finally, septicæmia would more rarely occur after ovariectomy if all fluid were removed from the peritoneal cavity by the most careful sponging before closing the incision."

Peritonitis, which proves the cause of death to many of those who die from this operation, is best avoided by leaving as few ligatures as possible in the peritoneal cavity, by removal of all putrefactive matters, by keeping the abdominal viscera at rest by preventing vesical and rectal action, and by complete antisepsis.

Should peritonitis develop, it should be at once treated by free and steadily continued use of opium, after the plan of Alonzo Clark. The bowels should be kept strictly constipated, the patient perfectly quiet upon the back, the diet be restricted to milk, and no other medicine than opium be administered. A difference of opinion exists as to the benefit arising from applications over the abdomen. Mine is, that, as a rule, stupes of turpentine, bladders of ice, and warm poultices, alike do harm. In cases where the disease is limited to the pelvis the last often do good, but in general peritonitis the comfort of the patient appears to be favored by an avoidance of them.

Should peritonitis arise after the lapse of four or five days, it should, I think, be looked upon as a septic peritonitis due to putrefaction of contained fluids, and it is a question whether such cases should not be treated in their very inception by peritoneal injections. Should it arise still later, for instance, about the tenth or twelfth day, it should be looked upon as a result of discharge into the peritoneum of encapsulated fluid material, and might likewise be met in this way, particularly if injection can be accomplished without reopening the abdominal wound. It is to avoid this necessity that I employ a drainage tube in appropriate cases.

In a patient exposed to the dangers of ovariectomy the temperature is a matter of the greatest moment, and its excessive elevation often proves

of itself, that is, without the full and fatal development of peritonitis or septicæmia, the cause of death.

The establishment upon a firm and enduring basis of clinical thermometry, as an adjuvant to the practice of medicine and surgery, constitutes one of the most important advances which has marked the nineteenth century, prolific as it has been in progress. No longer like his forefathers, groping in the dark and dealing with surmises and conjectures, the practitioner of to-day finds the former, both in diagnosis and prognosis, replaced by certainty and the latter by scientific deduction. By the aid of this accurate method he watches his patient's progress from day to day, nay, even from hour to hour, with the calm confidence of one who has a reliable knowledge of the present and a certainty that he will be forewarned as to the future.

But it is not only in reference to diagnosis and prognosis that thermometry aids us at the bedside. It having been observed that prolonged high temperature kills; that, the animal heat being kept for days at 106° , the patient almost invariably succumbs, the knowledge of this fact naturally suggested the adoption of means which, even although they did not cure the existing disorder, lowered the high rate of temperature, and barred at least this avenue to the approach of death.

The importance of doing this has been recognized by ovariologists, and partial results have been obtained by the use of quinine in large doses, the administration of salicylic acid, alone or in combination with soda, and the application to the head of the ice-bag of Wells. Struck by the very apparent inefficiency of these means, I have for some time been endeavoring to adopt some plan by which refrigeration of the trunk could be effected without the necessity of exhausting my patient by removal from the bed; and the "cold pack," sponging, and the apposition of wet cloths were, in turn, tried. The use of the cold bath I likewise considered, but the idea was at once abandoned; for the removal of a patient recently exposed to laparotomy from her bed to the tub was attended by risks which evidently must be much greater than those attending the same process in an ordinary case. The difficulties presenting themselves had well-nigh caused me to forego all hope of employing this means of combating hyperpyrexia, when the late Dr. G. W. Kibbee brought to my notice an ingenious device of his for accomplishing the desired result. He placed the patient upon what he called his "fever cot," which I here exhibit and describe in the words in which he advertised his invention.

Upon this cot a folded blanket is laid so as to protect the patient's body from cutting by the cords of the netting, and at one end is placed a pillow covered with India-rubber cloth, and a folded sheet is laid across the middle of the cot about two-thirds of its length. Upon this the patient is now laid, her clothing is lifted up to the armpits and the body enveloped by the folded sheet, which extends from the axillæ to a little below the

trochanters. The legs are covered by flannel drawers, and the feet by warm woollen stockings, and against the soles of the latter bottles of warm

FIG. 265.



"The bed on which the patient lies consists of a strong elastic, cotton netting, manufactured for the purpose, through which water readily passes to the bottom below, which is of rubber cloth, so adjusted as to convey it to a vessel at the foot. When not in use it can be close folded so as to occupy but little space."

water are placed. Two blankets are then placed over her, and the application of water is made. Turning the blankets down below the pelvis, the physician now takes a large pitcher of water at from 75° to 80° and pours it gently over the sheet. This it saturates, and then, percolating the network, it is caught by the India-rubber apron beneath, and, running down the gutter formed by this, is received in a tub placed at the extremity of the cot for that purpose. Water at higher or lower degrees of heat than this may be used. As a rule, it is better to begin with a high temperature, 85° or even 90° , and gradually diminish it.

The patient now lies in a thoroughly soaked sheet with warm bottles to her feet, and is covered up carefully with dry blankets. Neither the portion of the thorax above the shoulders nor the inferior extremities are wet at all. The water is applied only to the trunk. The first effect of the affusion is often to elevate the temperature, but the next affusion, practised at the end of an hour, pretty surely brings it down. It is better to pour water at a moderate degree of coldness over the surface for ten or fifteen minutes than to pour a colder fluid for a shorter time. The water slowly poured robs the body of heat more surely than when used in the other way. The water collected in the tub at the foot of the bed, having passed over the body, is usually 8° or 10° warmer than it was when poured from the pitcher. On one occasion Dr. Van Vorst, late house-surgeon to the Woman's Hospital, tells me that it gained 12° .

At the end of every hour the result of the affusion is tested by the thermometer; and, if the temperature have not fallen, another affusion is practised, and this is kept up until the temperature comes down to 100° or even less.

It must be appreciated that the patient lies constantly in a cold, wet sheet; but this never becomes a fomentation, for the reason that, as soon

as it abstracts from the body sufficient heat to do so, it is again wet with cold water and goes on still with its work of heat abstraction. I have kept patients upon this cot enveloped in the wet sheet for two and three weeks without discomfort to them and with the most marked control over the degree of animal heat. Ordinarily, after the temperature has come down to 99° or 100° , four or five hours will pass before affusion again becomes necessary.

This device of Dr. Kibbee is so simple that one wonders that any perplexity attended his accomplishing all that it does before it was shown to him, and at once the thought suggests itself how easily a substitute for it could be improvised. It is the old story of the egg of Columbus. The idea, once suggested, by its very simplicity assumes its place in the mind as a familiar one. Simple as it is, it affords the means of using a most important therapeutic resource, and, in my estimation, leaves nothing to be desired in this respect. Recognizing in this a method by which cold could be applied to the surface for any length of time without fatigue or exhaustion to the patient and without the danger of excessive chilling, since any great depression of temperature can be obviated by the affusion of warm water, I determined at once to adopt it after ovariectomy.

In adopting this plan of treatment after ovariectomy, and as I have in several cases done after parturition, I did not propose by it to check peritonitis, or to cut short septicæmia, the great evils to be feared at this time. My hope was to rob these diseases of one of their chief weapons of destruction—hyperpyrexia, and thus to resist the primary assault in the hope of bearing up against a more prolonged though less violent siege.

In all acute and grave diseases, the invasion of the disorder produces great commotion, which rapidly subsides as the system becomes familiarized with the invading ailment. This is most marked in pneumonia—and to a less degree in peritonitis and septicæmia, if the patient does not succumb very early. How often has every ovariectomist been surprised, in making an autopsy of a patient who has apparently died of acute peritonitis, to find only a slight field of pelvic peritonitis which most unsatisfactorily accounts for the destruction of life!

Robbed of its lengthy and wearing high temperature, which lasts for weeks, depraving the blood, altering the nerve centres, and degenerating the muscles, typhoid fever runs a much more manageable and less violent course. So septicæmia and peritonitis, kept from the commencement of their courses within normal limits as to temperature, are wonderfully different in their manifestations from the same diseases uninterfered with in this respect. Under these circumstances the system of the patient may be likened to a city exposed to attack from an armed foe. The great danger is from the first assault; but, once having resisted that, its prospects of holding out against a siege would be good, although in the end it might yield even to this. Still the prospects of successful defence would be

greatly increased if the primary, most energetic, and most vigorous attack were defeated.

I have now employed this method very freely for more than a year, and my confidence in it increases with growing experience. I would alter but one statement concerning it which I have formerly made; that is, I do not now often use water at very low temperatures, but usually at 90°, lowering it gradually to 80°.

As to the time at which the sutures should be removed, no fixed rule can be given, for it will depend upon the rapidity and completeness of union. Should union by first intention occur, some of them may be removed on the sixth, seventh, or eighth day. But great care should always be observed, and only those at points where the union is strong should be withdrawn. After withdrawal the abdomen should be firmly supported by adhesive plaster. The clamp, if employed, or the ligature, if passed out through the wound, should be removed when they lose their hold by reason of sloughing, and incline to fall off. No traction should be applied to them. A case was recently reported before a society in London in which too early removal of the clamp had resulted in obstinate protrusion of a knuckle of intestine, which produced fatal peritonitis. Mr. Wells used it as a text by which to urge that the clamp should always be left in place until it was ready to drop off. This will usually be about the ninth or tenth day.

The patient should be cautioned against rising too early after convalescence. Even after she is able to go about she should be very careful not to make any violent efforts, and for a year or two she should wear a well-fitting abdominal corset to guard against ventral hernia. I have had this occur in several cases. The abdominal walls were separated over a space measuring about four inches, and the intestines were supported only by skin, areolar tissue, and peritoneum. In one case these yielded to pressure, and one year after ovariectomy a tumor about the size of a kidney, with a mass of attached omentum, escaped.

The occurrence of ventral hernia is not the result of any bad management on the part of the operator. It may occur in any case, and sometimes comes on when no operation has been performed.

CHAPTER L.

OÖPHORECTOMY.

Synonyms.—This operation has been styled female castration, spaying, and Battey's operation.

History.—As the creation of the male eunuch by removal of the testicles has long been known as a procedure practised for other than scientific purposes, so probably has that of the female eunuch by removal of the ovaries. The former procedure was, however, very commonly put into practice; the latter very rarely so. The former is substantiated by unquestionable evidence; the latter rests merely upon vague tradition, which asserts that a king of Lydia had it practised upon a lewd daughter, and that in India female eunuchs were thus created in the olden time.

In the lower orders of animals spaying has long been very extensively practised, and is so to-day.

In 1823 James Blundell, of London, formally suggested the practice of this operation in a paper presented to the Royal Society of Medicine and Surgery of London. In this he suggested that the extirpation of the healthy ovaries would probably prove remedial for severe dysmenorrhœa and for the menorrhagia which accompanies inversion of the uterus where amputation is not practicable.

In 1872 Dr. Robert Battey, of Georgia, performed the operation for removal of the healthy ovaries for the premature production of the menopause. He was soon followed by Hegar, of Germany, who has since not only contributed more than any other to the clinical history of the subject, but has likewise done more than any predecessor or contemporary for the scientific elucidation of the procedure. His name is indeed almost as much associated with the operation as that of its originator, Battey.

Theory of the Operation.—Dr. Battey, basing his reasoning upon the fact that ovulation is the cause of menstruation, with all its accompanying pelvic engorgement and nervous exaltation, drew the deduction that extirpation of the ovaries by putting a stop to ovulation, would check its consequence, menstruation, and that thus many evils dependent upon these two processes would by it be cured. Such was his conclusion, and to test the question he began practising the procedure. Very soon he was followed by others, so that now the operation is recognized as a surgical resource in every civilized country, and sufficient testimony is in existence from which to draw conclusions as to its propriety.

Indications.—Ovarian extirpation is recommended for the following conditions:—

- Severe dysmenorrhœa ;
- Excessive menorrhagia ;
- Insanity occurring at times of ovulation ;
- Hystero-epilepsy ;
- Excessive hemorrhage with uterine tumors ;
- Hystero-neuroses, other than epilepsy of severe character ;
- Chronic ovaritis with severe symptoms ;
- Absence of vagina or uterus, the ovaries being present.

Of course the surgeon would have to decide according to his judgment and his conscience whether the evils for which he proposed operating were of so grave a character as to warrant his exposing his patient to a procedure of the gravity which the sequel will prove this to be.

The difficulties, the dangers, and the doubtful results of Battey's operation render it one to be avoided until all other resources have been tried, but when these have been exhausted and death, or what is oftentimes worse, a life of suffering, becomes the certain fate of the patient, it offers itself as a resource of great value.

*Results.*¹—In February last a table was published giving the results in 130 cases in which this operation has been performed, and since that time five others have been reported. Of these 106 recovered and 29 died, giving us a mortality of a little over 21 per cent.

Unfortunately not all those who recovered from the operation were cured by it of the evils for which it was endured. Mundé very justly remarks, "if the positive benefits of the operation were as assured as its rate of recovery, the opposition to it would soon cease." Of 24 patients who recovered from the operation, Simpson² reports that 2 received no benefit, that 11 were greatly improved, and that 9 only were entirely cured. Of the remaining 2 he makes no mention.

Names of those who have operated.—In estimating the degree of favor with which a new operation has been received, a great deal can be gathered from a survey of the names of those who have performed it. The table which I here subjoin will present this at a glance, at the same time that it will show the number of times that laparotomy and elytrotomy have been selected.

¹ Archives of Medicine, vol. iv., No. 1, Feb. 1880.

² British Med. Jour., May 24, 1879.

	Total.	Laparotomy.		Elytrotomy.	
		Recov-eries.	Deaths.	Recov-eries.	Deaths.
Hegar	42	35	7		
Schroeder	2	2			
Freund	4	3	1		
v. Langenbeck	1	1			
Martin	3	3			
Müller	3	3			
Czerny	3	2	1		
Schucking	1	1			
Bathey	12	2	...	8	2
Trenholme	2	1	...	1	
Goodell	6	1	1	3	1
Sims	7	2	1	4	
Engleman	3	...	3		
Thomas	2	1	1		
Peaslee	1	...	1		
Sabine	1	1			
Von Nussbaum	1	1			
Taufer	1	1			
Netzel	1	...	1		
Pernice	2	2			
Alberts	1	...	1		
Spencer Wells	1	1			
Simpson	1	1			
Kaltenbach	1	...	1		
J. Gilmore	1	1			
Martin	2	2			
Pallen	1	...	1		
E. Koeberlé	1	1			
W. C. Frew	1	1			
Prince	1	...	...	...	1
Welponer	1	1			
Esmarch	1	1			
Tait	2	2			
West	1	...	...	1	
Sims	3	3			
Noeggerath	11	8	3		
Hunter McGuire	2	2			
Lusk	1	...	1		
Tyng	1	1			
Savage	1	1			
Mann	1	...	1		
Börner	1	1			
	135	89	23	17	4

Mr. Lawson Tait reports in the *British Medical Journal* for July, 1880, 28 operations of oöphorectomy, which he had performed within the twelve months previous. Of these 25 were complete operations, with only 1 death; in the other 2 cases he failed to remove the ovaries entirely, and of these 1 recovered and 1 died.

Methods of Operating.—The ovaries may be extirpated, either by cutting through the vagina into the peritoneal cavity, elytrotomy; or by cutting through the abdominal walls, laparotomy. The statistical evi-

dence is somewhat in favor of the former of these, but the difficulties, the uncertainty of success, and the possibility of cutting into the rectum make the latter decidedly preferable, except in certain exceptional cases which will soon be mentioned. In a number of cases, even after elytrotomy, it has been found impossible to remove the ovaries, which were hidden away under masses of effused lymph, and as a secondary procedure laparotomy has been resorted to. I should, from my experience, offer this rule as to the choice of operation. If the ovaries can be distinctly felt as movable bodies in the pouch of Douglas, elytrotomy should be preferred; if they cannot be felt there, and if signs of old pelvic inflammation can be discovered, laparotomy should be selected as the most reliable and safe procedure.

Should elytrotomy be preferred, the patient may be placed in Boze-man's position, as shown in Fig. 256, and the perineum be lifted by Sims's speculum; or upon the back, in a modified Simon's position, Fig. 102, and the perineum be drawn down by the same speculum. Then the vagina being pulled down by a tenaculum fixed in it near its junction with the cervix, it should be cut through by scissors, the ovaries hooked down by the finger, drawn into the vagina, their ligaments ligated by carbolized silk or catgut, returned to the pelvis, and the vaginal opening closed by suture.

Laparotomy should be performed as in ovariectomy, the ovaries lifted, their ligaments tied, and the ligated pedicle dropped back into the abdomen.

The operation which is selected should be performed under the anti-septic method, and the after treatment of the patients should be the same as after ovariectomy, to which the reader is referred for details.

Estimate of Battey's Operation.—In concluding this subject let me express my views concerning this procedure in a series of propositions.

1st. Battey's operation will, by reason of the fact that there is a class of cases, the great sufferings attached to which can be relieved only by the cessation of ovulation and menstruation, survive all opposition, and exist in the future as a surgical resource of great value.

2d. It is an operation attended by grave dangers, and by doubtful benefits. Nevertheless, the chances are greatly in favor of its affording relief.

3d. It will ever prove more difficult and dangerous than ovariectomy, because pelvic peritonitis will frequently be found to exist in cases demanding it; because the ligature of the pedicle must often take place deep down in the pelvis; because the abdominal walls, instead of being stretched as in ovariectomy, are contracted and resisting; because the removal of the ovary often involves tearing the surrounding tissues; and because the abdominal peritoneum has not been prepared for interference by friction from a large tumor as it has been before ovariectomy.

4th. While the practice of the operation for checking menstruation where vagina and uterus are absent is fully sustained, it is very doubtful whether benefit will result from it in cases of large uterine fibroids.

5th. A greater degree of surgical skill is necessary for the successful performance of this operation than for ovariectomy.

CHAPTER LI.

DISEASES OF THE FALLOPIAN TUBES.

Anatomy.—The identity of structure of the Fallopian tubes and uterus will be appreciated by the study of the formation of these organs in the embryo, as described by recent observers, more especially by Leukart, Thiersch, and Kölliker.

In the walls of the Wolffian body, situated near the kidneys, on each side, in the female embryo, a narrow canal develops which ends below in the two horns of the uterus, while the distal extremity performs “a movement of rotation from before backwards, and from above downwards; the whole, together with the ligaments of the ovaries and the round ligaments, being enveloped in double folds of the peritoneum, which enlarge with the growth of the parts themselves, and constitute finally the broad ligaments of the uterus.”¹ Coming together at the median line these canals coalesce, or undergo fusion, forming the lower portion of the uterus, and the entire vagina down to the hymen. The fundal arch is now formed in all probability from fusion progressing from below upwards, although this is somewhat doubtful. Thiersch² thinks from observation on the embryos of sheep that it occurs from below upwards; while Kölliker, who experimented on those of cattle, believes that it occurs from the centre. Prof. Dohm, who experimented upon embryonic foxes, sheep, pigs, and cattle, concludes that it begins between the middle and lower third, and extends upwards and downwards. All this occurs very early in embryonic life; according to Dohm it is completed by the end of the second month. From the fact of this identity of structure there naturally exists between these organs a close sympathy in health and disease.

In the adult woman, according to Carl Hennig,³ the right tube is nine and a half centimetres (three and three-fourths inches), while the left measures only eight and a half. The abdominal extremity has attached to it five large and ten small fimbriæ. The walls of these tubes consist: 1st. Of peritoneum, which covers them to the fimbriated extremities. 2d. Of connective tissue, in which are interspersed two sets of muscular

¹ Treatise on Human Physiology, by J. C. Dalton, p. 645.

² Prof. Dohm, of Marburg. Transac. Instruktion Convention, Obstet. Journ., vol. iii. p. 167.

³ Uterine Catarrh. Translation in Obstet. Journ. vol. iii. p. 468.

fibres, external or longitudinal, and internal or transverse, which are continuations of the muscular tissue of the uterus and broad ligaments. At the point where these tubes enter the uterus, Hennig declares that the longitudinal and transverse layers of fibres both become greatly developed, and that the latter forms here a distinct *sphincter tubæ*. 3d. We find within and lining the tube a mucous membrane, which is thrown into large and small folds, which are very evident near the fimbriated extremity, and gradually become insignificant as we advance towards the uterus. Within this membrane Mr. Bowman discovered tubal glands, which consist of grape-like structures, extending downwards towards the subjacent muscular fibre. They differ from the muciparous follicles of the vagina, the Nabothian glands of the cervix, and from the utricular follicles of the uterine cavity. Kölliker denies the existence of these, but Hennig¹ describes them very fully. These compound glands of the Fallopian tubes are lined with an epithelium of basement form. The mucous membrane covering over the tubes, and not dipping down into these glands, is covered by a ciliated epithelium, the broom-like action of which is exerted towards the uterus. The object of this seems to be to sweep the products of the ovaries into the uterus, and to force in the same direction menstrual blood oozing into the tubes from their mucous lining, as a result of ovulation. The zoosperms, which are known to pass through the uterus and proceed as far as the ovaries, are themselves endowed with powerful ciliary action in the single cilia which each possesses, and by this they overcome the opposing force of the tubal ciliæ.

It is highly probable, to say the least, that the erectile condition induced in the mucous membrane of the uterus and tubes by contraction of the middle coat of their muscular fibres produces in the latter, as in the former, rupture of bloodvessels and consequent hemorrhage. Hennig declares that "during² menstruation throughout its entire surface, it (the mucous membrane of the tubes) assumes a dark red color." Ruysch, an old anatomist of Amsterdam, who wrote in 1737, describes a post-mortem examination in which he discovered the Fallopian tubes containing blood. This has by some of the writers upon the history of hematocele been construed into a record of that affection, but the passage appears to refer merely to a condition which depends upon ovulation. Messrs. Bernutz and Goupil³ mention instances of the collection of blood in the Fallopian tubes in consequence of obstruction of these canals. Dr. Duncan⁴ admits that some blood may come from the tubes in natural menstruation. In two of my cases of ovariectomy in which I employed the clamp, the patients menstruated regularly through the tube for three periods, when at the same time menstruating per vaginam. The abdominal opening then

¹ Loc. cit., p. 473.

² Loc. cit., p. 470.

³ Op. cit., vol. i.

⁴ Fecundity, Fertility, and Sterility, p. 388.

closed, and the discharge was thereafter confined to the vagina. Other cases of the same kind are on record. Now as in these cases there was free exit of blood per vaginam, there can be no reason for believing that a regurgitant action occurred. The blood flowing by the tube was more probably the result of hemorrhage into that canal, the uterine end of which was constricted by traction, effected by the confinement of the abdominal end in the wound.

The diseases by which the Fallopian tubes may be affected are the following:—

Inflammation ;
Stricture ;
Distention ;
Displacements.

Inflammation of the tubes, or salpingitis, consists in inflammation of their mucous membrane, and may be either acute or chronic.

The acute variety generally results from puerperal endometritis, or from gonorrhœa, which has extended through the uterine mucous membrane. I have twice seen this disease almost destroy life by attacking the uterine mucous membrane, and subsequently producing pelvic peritonitis, doubtless reaching the peritoneum by traversing the tubes.

Chronic salpingitis is one of the sources of uterine leucorrhœa, and commonly produces permanent interference with the calibre of the tubes. In some cases it results in constrictions, while in others it produces dilatation. The latter condition it probably is which produces the discrepancy observed between the reports of various observers as to the dangers resulting from intra-uterine injections. When the sphincteric action of the sphincter tubæ of one or both sides is destroyed, fluid thrown into the uterus will sometimes enter the tubes, and produce in them contraction, spasm, and violent acute salpingitis, which may go on to the production of peritonitis and death. When dilatation has occurred it is not at all rare for the uterine sound to be passed for several inches up the tube. I have met with several unquestionable cases of this kind. I say unquestionable, because the sound must have followed one of two courses—through the fundus into the peritoneum, or up the canal of one of the tubes.

As this subject has created some discussion, I will rapidly allude to two of these cases.

A physician, residing near this city, wrote to me concerning the case of his wife, who had chronic corporeal endometritis of several years' duration. Upon using the sound, he was alarmed at finding it pass into the uterus nearly six inches. The lady came down to me, and upon repeated measurement I found the sound pass a little over three inches. The patient went home, and her husband, surprised at my results, used the sound again, when, as before in his hands, it passed in over five inches. To solve the paradox he at once came down with her, and when examining with him I

distinctly showed him the normal measurement, a little over three inches, and then twice passed the sound up one tube a distance of two inches.

One of my clinical assistants pointed out to me at my clinique, as a fit subject for a lecture, a patient whose uterus measured five inches, and who presented no symptoms except those of ordinary uterine catarrh. I had occasion to examine this patient, after stating this measurement, before the class, when I found that the sound passed only three inches. Confident, from the well-known accuracy of my assistant, that he could not have erred, I at once stated to the class what I believed to be the cause of the discrepancy, and in its presence passed the probe up the right tube, making a measurement of five inches. To avoid all chance of error, I then requested my assistant to verify my two measurements, when he also passed it first three inches to the fundus uteri, then two inches up the right tube. Hildebrandt¹ relates two cases in which he passed a probe up the tube, and similar instances are recorded by Veit,² Matthews Duncan,³ Noeggerath,⁴ and others.

The great danger in both acute and chronic salpingitis is pelvic peritonitis, which may spread and destroy life. This arises in part from escape of the contents of the inflamed tubes into the peritoneum.

Of the symptoms very little can be said. The chronic variety may continue for years, and result in dilatation of the tube with no symptoms which arrest attention; while the acute form so quickly produces local peritonitis, that its symptoms are lost in those of that affection.

No special treatment is applicable to it except the adoption of means to prevent peritonitis, as rest, opiates, leeches, and strict avoidance of sexual intercourse.

The great obscurity of the diagnosis of tubal diseases renders the subject one upon which it is not profitable to speak further, although as a pathological study it is one of great interest.

Stricture.—The Fallopian tubes, which are often imperfect or wanting when the uterus is absent or undeveloped, may, even after full development, be affected by stricture. The condition may be produced by these causes:—

- Calcific deposit;
- Senile atrophy;
- Salpingitis;
- Pelvic peritonitis;
- Tubercle or fibrous tumors.

Partial obliteration of the canal results in sterility if it affect both sides simultaneously, and sometimes, by causing the accumulation of fluids, it

¹ Barnes's Report on Midwifery, Brit. and For. Med.-Chir. Review, Oct. 1868.

² New York Obstet. Journ., vol. i. p. 267.

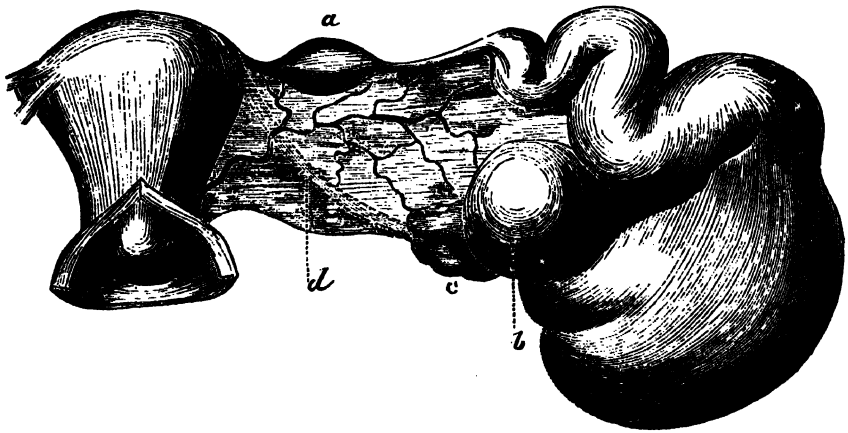
³ Edinburgh Med. Journ., 1856.

⁴ Remarks before Obstetrical Society, New York.

produces tubal dropsy. It is not rare for rupture of the tubes and consequent hemothecoe and peritonitis to result from imprisonment of menstrual fluid in them. M. Puech analyzed two hundred and fifty-eight cases of congenital atresia of the genital organs, and found that in fifteen cases the Fallopian tubes were dilated, and in five were ruptured. The condition is rather a study for the pathological anatomist than for the gynecologist, for it can neither be diagnosticated nor relieved by treatment.

Distention.—The tubes may be distended by accumulation of mucus, pus, menstrual blood, or a muco-serous material secreted by the altered mucous membrane accompanying great and prolonged distention. This condition invariably has as its moving cause stricture, which prevents the tube from emptying itself into the uterus. When very great distention takes place, the accumulated fluid either forces its way out of the uterine extremity, constituting the profluent dropsy of Rokitansky, or passes out of the fimbriated extremity into the peritoneum, or a rupture of the tube occurs. Such an accumulation may produce a tumor equal in size to the head of a child of ten years, and some say even much larger, though there is doubt as to the authenticity of the latter cases. Virchow has established a class of cysts which he styles cysts from retention, to which distention of the tube by sero-mucus properly belongs.

FIG. 266.



Tubal dropsy. (Boivin and Dugès.)

The diagnosis in advanced cases, where, for example, the tumor has developed to the extent just mentioned, is difficult and often impossible. Sometimes, however, it may be made by the following means: An elongated, fluctuating, movable tumor is felt in the retro-uterine space a little to one side; in its outlines the tumor is wavy, and it can be separated from the uterus. Scanzoni quotes Kiwisch as declaring that, in such cases, the presence at the side of the fundus of a mammillated, elastic, and

elongated tumor, justifies the diagnosis of tubal dropsy, but he differs from him, and regards the positive diagnosis as impossible. In case the diagnosis can be arrived at, the most appropriate treatment would consist in tapping per vaginam.

Displacements.—The tubes may pass with hernial protrusions into the inguinal or crural openings, and, in case of inversion of the uterus, may descend into the cavity of the displaced organ. It is generally in company with the ovary that the tube leaves its place, but at times it descends alone. Dr. Scholler¹ reports an instance in which, in a child who died twenty days after birth, a tumor was discovered which extended from the inguinal region to the right labium, and contained the Fallopian tube, which was non-adherent. A crural hernia of the tube alone which ended fatally is likewise recorded by M. Bérard.

Prof. Rokitsansky,² and Dr. Turner, of Scotland, have both drawn attention to severance of the tube from the ovary by traction from increased weight of the latter or from false membranes. The former cites twelve instances in support of the fact.

Other Diseases of the Tubes.—In addition to these diseases the tubes are sometimes affected by cancer, tubercle, fibrous tumors, abscess, and accumulation of blood in their canals from hemorrhage from the mucous membrane. There is so strong an analogy between these disorders and the same in other organs, that it is not deemed necessary to enter upon their consideration.

CHAPTER LII.

EXTRA-UTERINE PREGNANCY.

It is evident that to condense into the narrow limits of a short chapter a subject which would require a volume for its extended consideration, involves of necessity a superficial review of its essential points only.

It may even be thought by some that this subject is out of place in a work upon gynecology, and that it should have been left for one devoted to obstetrics. Its admission here is proof of the fact that I do not share this feeling. Ectopic gestation, although theoretically falling in the domain of the obstetrician, in reality almost always claims the attention of the gynecologist from the fact that the existence of pregnancy is in these cases very generally not recognized, the patient being supposed to suffer from some pelvic tumor or obscure uterine or ovarian disorder. It is very frequently necessary to differentiate it from a variety of disorders which

¹ Courty, op. cit.

² Sydenham Soc. Year-Book, 1861.

will soon be mentioned, and even its treatment involves rather a familiarity with the resources of gynecology than with those of obstetrics.

Definition and Synonyms.—Extra-uterine pregnancy, extra-uterine or ectopic gestation signifies the fixation and development of the impregnated ovum outside of the uterine cavity.

Varieties.—For the physiologist and pathologist there are many varieties of this abnormal gestation; for the gynecologist there are but three. For him the tubo-ovarian, tubo-abdominal, ovarian, and some other varieties are niceties beyond the appreciation of diagnosis, and he is forced to limit himself as far as practice is concerned to the classification of all varieties into, 1st, tubal; 2d, interstitial; and 3d, abdominal pregnancies. These by rational and physical signs he may differentiate from each other, and in certain cases base the propriety of surgical interference upon his conclusions. These, and these only, then, are the varieties which we shall consider in this chapter.

Tubal pregnancy, the most dangerous of all varieties of extra-uterine gestation, consists in the arrest of the impregnated ovum in the Fallopian tube and its development there. It may be that instead of being absolutely in the tube the fructified ovum may develop just where the fimbriated end of the tube clasps the ovary.

Interstitial pregnancy consists in an advance of the ovum through the tube until it begins to pass through the uterine wall. Then an arrest taking place before the ovum enters the uterus, it attaches itself, distends the parenchyma of the uterus to make its nidus, and causes it to protrude partly towards the uterine cavity, partly towards the abdominal.

In abdominal pregnancy one of two things occurs: either the tube holding the impregnated ovum in its grasp breaks away from its ovarian attachment, falls into the abdominal cavity, and remains there, while the ovum casting out tentacula attaches itself to the peritoneum and grows; or, as some suppose possible, the impregnated egg falls out of the grasp of the tube, and, getting its nourishment from the peritoneum, develops independently of the lining membrane of the uterus which extends throughout the tubes.

Etiology.—It is a fact universally accepted that in the human female, as in the lower order of animals, impregnation of the ovule often occurs at or near the ovary. In some cases, by a stricture in the tube, due to lessening of its calibre by inflammation, the development of a little tumor, or contraction of lymph poured out by pelvic peritonitis, an obstruction is offered to the progress of the ovum towards the uterus. In contact with a mucous membrane closely resembling that of the uterus, it at once accommodates itself to its vicarious quarters, attaches itself, forms a placenta, and steadily grows. There are many points in pathology concerning which no one has a right to an opinion who has not made researches of a more or less personal character in regard to them. The pathology of extra-

uterine pregnancy is one of them, and although my experience in reference to this condition is quite large, as I shall soon show, I express myself upon it with great hesitation.

Although extra-uterine gestation has been divided by pathologists into abdominal, tubal, ovarian, interstitial, tubo-abdominal, and tubo-ovarian, it seems highly improbable that the ovum at the moment of its impregnation could attach itself to any other tissue than the lining membrane of the uterus, which is so especially constructed to accommodate it. Once having undergone development in this connection, however, it rapidly invades adjoining structures, the omentum, peritoneum, etc., and forces them to nourish it.

Pathology.—Should the arrest of the ovum have occurred in one of the tubes, it develops rapidly and endeavors to furnish a uterus for the growing child. But the muscular structure of the tubes, being scanty compared with that of the uterus, although it develops to accommodate its contents, gradually grows thinner and thinner under distention until, towards the end of the first, second, or third month, it usually ruptures, and the contents of the ovum, as well as much blood escaping from the ruptured vessels of the tube, escape into the peritoneal cavity.

A true hematocele is thus created, the patient generally becoming collapsed, and dying, and very rarely escaping by absorption of the blood and by encapsulation or discharge of the foetus. Veit¹ declares that about one-fifth of all cases of hematocele are due to the rupture of tubal pregnancies, and that recoveries occur under these circumstances much more commonly than is generally supposed. I do not agree with him as to the frequency of this cause of hematocele, but I am quite sure that I have seen it thus produced, and have seen recovery follow. These are the cases of hematocele which are classed by Barnes under the name of "cataclysmic." As a rule the violence of their onset entitles them to that name, but it is highly probable that some of those occurring at early periods of gestation develop with less violent and overwhelming symptoms.

Hecker reports 45 cases of tubal pregnancy. In 26 cases rupture occurred in the first month, in 11 cases in the third month, in 7 cases in the fourth, and once in the fifth month. Spiegelberg² reports a case of an ovum advancing to maturity in the tube.

Interstitial pregnancy is much less frequent and less dangerous than the variety just mentioned. It is much more likely to advance to full term, and while it may produce death by rupture and discharge into the peritoneum, it may, as in my fourteenth case, discharge into the uterus and be expelled through the natural passages. Dr. Lenox Hodge once succeeded in recognizing the existence of such a case at full term, cut through the

¹ Deutsche Zeit. für prakt. Med., No. 49, 1878.

² Arch. f. Gyn., Bd. i. p. 406.

layer of parenchyma which shut the foetus off from the uterus, and conducted the case to a successful issue.

Although not attended by as great dangers as attach to tubal and interstitial pregnancies, the abdominal variety is a most serious aberration from normal gestation, and one which commonly destroys life. In the first two forms the rapidly developing ovum is imprisoned in tissues which are inapt for great distention, and which rupture under its influence. In the third the foetal ball has at its disposal for expansion and growth the whole peritoneal cavity, the placenta encroaching in its search after nutriment upon the bladder, the omentum, the intestines, and any portion of the peritoneum within its reach. The events of this form of pregnancy are the following: First, the foetus unnaturally attached and nourished may die in the early months of its life, become encysted, and in time be cast off through the rectum, the bladder, or through the abdominal walls. Second, the pregnancy may advance to the end of the ninth month, when, labor coming on, nature makes a persistent effort to expel the child, but, on account of there being no way of exit, fails, and the child, with its envelopes, is retained, and becoming encysted remains in its nidus for years, creating no disturbance by its presence. Third, the child, shut up in its unopened shell, acts as a foreign body, creates suppurative action in its envelopes, and becomes surrounded with pus in place of liquor amnii. Or, the liquor amnii being absorbed, the foetal bones become closely hugged by the walls of the cavity which contains them, and act as an intense irritant, which sets up formation of pus and in this way leads to hectic fever from absorption of septic material.

Hecker found that out of 132 cases of abdominal pregnancy, 76 terminated in recovery. Recovery took place in 28 cases after expulsion of foetus per anum, in 17 cases after formation of lithopædion, in 15 cases after elimination through the abdominal wall, in 11 cases after laparotomy, in 3 cases following vaginal section, in 2 cases from undefined causes. Death followed from hectic in 18 cases, peritonitis in 12 cases, operations in 12 cases, rupture and hemorrhage in 7 cases, fecal vomiting in 2 cases, dropsy in 1 case, cause not defined in 4 cases.

Causes of Death.—The causes of death in the various forms of extra-uterine pregnancy may thus be presented:—

- Shock ;
- Hemorrhage ;
- Septicæmia ;
- Peritonitis ;
- Hectic fever ;
- Perforation of important viscera by bones.

Symptoms.—The suspicion of extra-uterine pregnancy is usually created in one of the following ways: 1st. A woman who has passed over one, two, or three menstrual epochs is suddenly seized with the symptoms of

hematocele, agonizing pelvic pain, faintness, coldness of extremities, bathing of face with cold sweat, rapid and feeble heart action, and nausea and retching. She dies of overwhelming nervous paresis, called "shock," of hemorrhage, of peritonitis, or of septicæmia; or she gets well, the diagnosis of pregnancy is regarded as a mistake, and she is said to have recovered from hematocele which was the result of temporary suppression of menstruation.

2d. A woman who supposes herself to be pregnant becomes alarmed by the development of one, two, or three sets of abnormal symptoms: (*a*) the occurrence of irregular, immoderate, sudden, and excessive gushes of blood; (*b*) the rapid and disproportionate enlargement of the hypogastrium; or (*c*) the manifestation of a dull, grinding pain, fixed in one iliac fossa or extending thence down the thighs, and, as time passes, becoming markedly paroxysmal and spasmodic.

Suspicion is thus excited, not of the existence of this vice of gestation, but of something being wrong, and a careful examination by rational and physical signs is instituted. Should such examination be made after rupture of the vicarious uterus, and escape of its contents into the peritoneal cavity, the ordinary physical signs of hematocele will be detected, and to their enumeration in the chapter devoted to that subject the reader is referred.

Physical Signs.—Besides the symptoms mentioned pointing to the advisability of a physical examination, the uterus is usually found enlarged, lifted up in the pelvis, and pressed forwards or laterally by a tumor which exists posterior to it or on one side. This tumor is found to be nearly immovable, very slightly sensitive upon pressure, and marked by a peculiar degree of hyperæmia, which gives, to an exaggerated degree, the violet hue of gestation to the vagina. It is marked by a very rapid growth, so that a week's watching will show a decided increase in its dimensions.

The tumor alone would not furnish sufficient grounds upon which to found a diagnosis of ectopic gestation, but a rapidly growing pelvic tumor accompanied (*a*) by the gastric and mammary symptoms of pregnancy, (*b*) by cessation of menstruation, (*c*) by enlargement of the uterus, (*d*) by the purple hue of the vagina, and (*e*) by the detection of ballotement in the tumor, would do so.

Differentiation.—The conditions with which extra-uterine gestation is most likely to be confounded are the following:—

Uterine fibroma or fibro-cyst;

Cyst of ovary or broad ligament;

Hematocele;

Double or bi-corned uterus with impregnation of one side.

Normal pregnancy with retroflexion;

Pelvic abscess.

The uterus is, in these cases, lined by decidua, and it is almost as much

enlarged as in normal pregnancy. Before any decision is arrived at it is often wise to dilate the cervical canal with tents, so that the finger may be introduced to the fundus. By this measure normal pregnancy, if it exist, is interfered with, but the exigency requiring immediate diagnosis is so great, that this disadvantage must be accepted.

Dilatation of the cervical canal having served to exclude normal pregnancy, while all the symptoms of pregnancy exist with marked enlargement and softening of the uterus, and with the presence of a suspicious tumour in the pelvis, the probabilities in favor of extra-uterine foetation become strengthened. Still the differentiation of this from the other conditions mentioned remains to be established, and it is often very difficult. It is only by the most careful consideration, patient research, and judicious delay that it can usually be accomplished. While these are being exercised, rupture of an extra-uterine foetal nest may occur, and a fatal issue be the consequence.

In some cases, ballottement, clear and distinct as that which is gotten in normal pregnancy, lends us its aid and makes diagnosis certain; in others the aspirator clears up the case; while in others still, where, for example, the question lies between a cyst of the broad ligament and extra-uterine pregnancy, cutting into the sac by means of the incandescent knife will combine diagnosis and treatment in a most satisfactory manner.

Let me illustrate the difficulties and methods of diagnosis under these circumstances by the relation of three cases.

CASE 1.—Mrs. A. suddenly ceased menstruating, and for three months suffered from nausea and vomiting, and pelvic pain extending down one thigh, and became so enfeebled and emaciated that she could not stand without support. She came to me from Peekskill, and upon examination I found the uterus elevated and pushed to one side by a fluctuating tumor in one iliac fossa. Drs. Fordyce Barker and Noeggerath saw her in consultation with me, and we could not decide whether it was a case of amenorrhœa with cyst of the broad ligament or tubal pregnancy. Immediate action was necessary, and I cut through the vaginal walls with Paquelin's thermocautery and found the former condition existing.

CASE 2.—Mrs. B. was brought to Dr. Marion Sims and myself to decide as to the cause of irregular menses, with violent pain in left iliac fossa. Physical examination showed uterus pushed upwards and laterally by a tumor attached to its left horn. The question lay between interstitial pregnancy and inflammatory product in left broad ligament. To decide it we fully dilated the uterus by tents, introduced the finger fully to the fundus, and found the latter condition to exist.

CASE 3.—Mrs. C. consulted me on account of a soft, fluctuating tumor posterior to the uterus, accompanied by cessation of menstruation. I was doubtful whether it was a fixed ovarian cyst, a hematoma, or an abdominal pregnancy. Her symptoms were so urgent that I dared not delay for

time to solve the question, so I passed through the mass a strong interrupted current which would have killed a fœtus had one existed. But it proved to be a hematoma, and was subsequently discharged through the rectum.

The question of diagnosis being a very momentous one, it is generally advisable to settle it by crucial tests, which are not attended by great danger if the case be not one of pregnancy, and might prove curative if it were so.

Very often we hear of physicians being blamed on account of failure of diagnosis in these cases which suddenly die from rupture. Every medical man who countenances such a charge demonstrates his want of experience or his want of professional loyalty by so doing. Very often there is nothing in these terrible cases to excite suspicion; very generally nothing to decide us positively even when suspicion is excited.

Symptoms of Approaching Rupture.—The part containing the fœtus and constituting a vicarious uterus begins to contract, and miniature uterine efforts show themselves in increasing severity, a bloody flow takes place from the cervix, and very commonly a small piece of deciduous membrane is expelled. These symptoms will very probably be supposed to point to abortion, and the case is usually allowed to proceed until the suddenly developed symptoms of rupture of the sac serve to open the eyes of the practitioner to the truth, or at least excite in his mind a strong suspicion of it.

Recognition of the Varieties.—Nothing is easier in a written description or in the lecture-room than to point out the means of differentiating the three great varieties of ectopic gestation—abdominal, interstitial, and tubal. Nothing is more difficult, as every man of large experience in this difficulty will agree, than to do this at the bedside. In general terms it may be said that the interstitial form is very rare, that the tumor consists of an irregular enlargement of the uterine body, and that the tumor moves with the uterus, while at the same time this organ is empty: that tubal pregnancy gives an enlargement at the side of the uterus, yields ballottement more generally than the other forms, and is marked by a tumor somewhat separated from the uterus, and which does not decidedly move with it: and that abdominal pregnancy is generally detected late, at a period when the rolling of the child's body in the abdomen can be detected, while at the same time the uterus is found to be empty.

I do not pretend to offer these differences between the varieties as universal and reliable means of differentiation. Indeed, no such means will be offered by any one whose experience is large; for such experience must have taught him that none such exist. I have seen two cases of interstitial pregnancy, and have relied in the description which I have given very largely upon the signs presented in these.

Prognosis.—Whatever be the variety, the period, or the circumstances connected with this vice of gestation, the prognosis is bad. True a large

number of women escape death; but this fact does not contradict the statement just made. The prognosis is most favorable in abdominal pregnancy when adhesion has occurred from death of the fœtus and subsequent inflammation between the sac wall and the parietal peritoneum; less favorable where no such adhesion exists and the peritoneal cavity is free in front of the fœtal shell. It is more favorable in interstitial than in tubal pregnancy, and least favorable in the purely tubal variety. In the tubal form it is much less favorable if the fœtus be living than if it be dead. Kiwisch¹ reported 100 cases of extra-uterine pregnancies, with 18 recoveries; Puech 100 cases of tubal pregnancy, 98 cases of rupture of tube, 2 of rupture of vein of broad ligament, 1 recovery; 199 cases of elimination of fœtus in the ovarian and abdominal form, 146 recoveries. (See Courty, p. 996.)

As my experience in this condition has been quite large, I report it in full in the subjoined table:—

No. of case.	With whom seen.	Variety.	Remedial measures adopted.	Termination.
1	Dr. Mouraille.	Tubal.	.....	Death from rupture.
2	Dr. Henschel.	Tubal.	Aspiration by Dr. Thomas.	Death from septicæmia.
3	Dr. Henschel.	Tubal.	.....	Death from rupture.
4	Dr. Giberson.	Tubal.	.....	Death from rupture.
5	Dr. J. L. Brown.	Tubal.	Aspiration by Dr. Thomas.	Death from rupture.
6	Drs. Green and Crane.	Tubal.	Elytrotomy by Dr. Thomas by galvano caustic knife and delivery of fœtus.	Recovery.
7	Drs. Coates and Barker.	Abdominal.	Laparotomy by Dr. Thomas.	Recovery.
8	Dr. Chas. Young.	Abdominal.	Laparotomy by Dr. Thomas.	Recovery.
9	Dr. J. Hadden.	Abdominal.	Laparotomy by Dr. Thomas.	Recovery.
10	W. J. Walker.	Abdominal.	Discharged by vagina.	Recovery.
11	Olcott.	Abdominal.	Discharged by rectum.	Recovery.
12	Drs. Barker, Fisher, Lusk and Metcalfe.	Tubal.	.....	Death from rupture.
13	Dr. Green.	Interstitial.	.....	Died years afterwards from pneumonia.
14	Drs. Enmet and McBurney.	Interstitial.	Life of fœtus destroyed by electric current; fœtus discharged through uterus.	Recovery.
15	Drs. Peaslee and Janvrin.	Abdominal.	Incision by Dr. Peaslee.	Death from septicæmia.
16	Dr. W. Frankel.	Abdominal.	.....	Still living.
17	Dr. Harrison.	Abdominal.	Electric current now being used.	Patient living.

¹ Spiegelberg, Lehrbuch der Geb. Hülfe, 1877, p. 323.

Of these 17 cases, 2 were interstitial and both recovered; 7 were tubal and 1 only recovered; 8 were abdominal and 5 recovered; while 2 are still doubtful. Out of the 17 cases, 10 recovered and 7 died. This fact, however, must be noted: 2 patients still live, and the diagnosis may be incorrect in their cases, or they may yet die of the condition if the diagnosis be correct. Out of the 17 women thus affected, 9 were submitted to surgical procedures, and out of these 6 recovered and 3 died. *

Treatment.—In dealing with the treatment of extra-uterine gestation, I am possessed by a strong desire to avoid even the appearance of dogmatism. There is none in the whole list of subjects obstetrical and gynecological about which so little is absolutely settled and upon which practical men differ so widely. At one extreme stand able and conservative practitioners, who appear to favor the position that, as a very general rule, we should stand calmly by with folded arms and accept without effort or resistance the terrible chances of death which attend these cases. At the other, we see enthusiastic ones with strong surgical proclivities, who would apparently resort to laparotomy in every case in which diagnosis is possible. On a middle ground, one lying between these extremes, the truly conservative surgeon will find his appropriate position.

Let us in the beginning recognize the fact that, do what we will—remain utterly inactive, or use the greatest surgical enterprise—the issue of these unfortunate cases will very likely be bad. And let every surgeon be sure that he does not shirk a dangerous operation because he fears the odium which will probably attach to a fatal result, and which he would avoid if he simply allowed his patient to die without an effort.

He who cannot bear unjust censure and endure without complaint an odium which he does not deserve, was not born to be a surgeon, one of the greatest functions of whose life this is; and under the grave responsibilities which attach to the conduct of a case of ectopic gestation it is the bounden duty of such an one to place his patient's interests in stronger hands. The statement is true everywhere in surgery, but nowhere is its truth more strikingly apparent than in these cases, that every personal consideration, every private interest, should yield to the good of the patient!

One point which may be regarded as entirely settled in the treatment of extra-uterine pregnancy is this: a secondary operation for discharge of the contents of the fetal sac is always safer than a primary one. But its antithesis must likewise be recognized—it may become hazardous to discard a primary operation and to expose a patient to the delay involved by waiting for a secondary one. The rule for interference should then be this: delay is wise so long as it is the offspring of prudence; it is culpable as soon as it becomes the dictate of timidity and indecision.

The only way in which justice can be done to this subject is by supposing

certain conditions differing widely from each other, in which the patient may be seen :—

(a) The tumor being low in the pelvis, fluctuation distinct, and the diagnosis of extra-uterine pregnancy well established, the life of the fœtus should be destroyed by means as certain and as free from danger as possible. There are three methods by which this may be done: 1st, by passing through the tumor a strong, interrupted current, one electrode in the rectum and the other on the most prominent part of the tumor, the judgment of the practitioner being the guide as to the power and duration of the current; 2d, by injecting through the vaginal or abdominal walls, by means of a long and slender hypodermic needle, ten to fifteen drops of Majendie's solution of morphia directly into the sac; and, 3d, by drawing off the liquor amnii by a very small aspirator needle with antiseptic precautions. In the last two operations mentioned the needle, first immersed in boiling water, should be thoroughly carbolized before being used, the solution employed should be carbolized, and the puncture brushed thoroughly with carbolized solution and painted with collodion.

The puncture of the extra-uterine ovisac has been performed in a number of instances with good results; viz., twice by Morton, and once each by Greenhalgh, Stoltz, and Koeberlé. I have resorted to this plan twice, and lost both patients. One died of septicæmia; the other of hemorrhage into the sac and rupture. Dr. Routh has recently reported a case which ended fatally after the same operation, as my second one did.

(b) The pregnancy being to all appearances one of tubal variety, and immediate action being demanded by severity of symptoms, two courses offer themselves. 1st, if the tumor be certainly accessible from the pelvis, it may be cut freely into by a dull, incandescent point, like the knife of Paquelin's thermo-cautery, the fœtus removed, hemorrhage controlled by a firm tampon, septicæmia prevented by antiseptic injections, and the placenta allowed to come away of itself; 2d, the operation of laparotomy may be performed, the broad and ovarian ligaments and the Fallopian tube be included as a pedicle in a ligature, and the fœtal mass be removed.

From my present experience I should say that if the tumor be low in the pelvis, fluctuation in it be beyond doubt, and reaching the sac certain, the safest and best method of dealing with the case would be to introduce a large Sims's speculum, and, bringing the dull cautery of Paquelin's apparatus to a red heat, cut slowly into the sac. Then the fœtus, but not the placenta, should be removed, a linen bag filled with cotton used as a compress fixed externally upon the abdomen over the site of the tumor with adhesive plaster, and the sac carefully filled with antiseptic cotton, which should be renewed once in every thirty-six hours. Listerism should be carefully observed. By these means hemorrhage can be completely controlled, and, this danger and septicæmia being put aside, it is difficult to conceive what

more we can ask in that class of cases. In these cases also the fœtus may be destroyed by injections of morphia or by a strong, interrupted current, and subsequent events be waited for.

(c) Should the pregnancy unquestionably be abdominal, as proved by its advance beyond the period ordinarily possible for tubal distention, and by the comparatively small size of the uterus, it should not be interfered with until the completion of the full term. At that time an effort at labor usually occurs and gives a signal for action. Should this most fortunate event occur, the crowning triumph of obstetric surgery may be reached in the delivery of a living child from a living woman at full term, as was done by Jesop, of Leeds, in a case reported to the London Obstetrical Society a few years ago.

At the present day, when abdominal surgery is so thoroughly systematized and fully understood, and when the great contributions to it of the illustrious Lister have so completely altered its results, it is worse than useless to quote the statistics of laparotomy for extra-uterine pregnancy collected by Campbell and others. A new departure must be made in the subject, and the future must make its own record.

In these cases, where the head passes downwards into the pelvis, it sometimes becomes possible to cut through the vaginal wall, seize the presenting part by the obstetric forceps, and deliver a living child from a woman, only slightly endangered by the operation, almost *per vias naturales*. In the year 1816, Dr. John King, a country practitioner, residing upon Edisto Island, on the coast of South Carolina, met with just such a case as I have pictured, and being both a bold and original man, he followed the course to which I have alluded, with the result of saving mother and child. This case will be found published in the Med. Repository, 1817, and a pamphlet upon the subject by Dr. King is now in the possession of Dr. Pooley of Yonkers, N. Y.

(d) Should delivery at full term not be accomplished, a lithopædion or petrified infant may result and be retained for many years; suppurative action may occur in the fœtal envelopes, and laparotomy be subsequently resorted to as a secondary operation; or, the liquor amnii being absorbed, the bones of the child may remain clasped by the fœtal envelopes and produce dangerous inflammation and ulceration. Under these circumstances it requires a great deal of consideration as to the proper course to pursue; whether to interfere or to leave matters to nature. Even if it be recognized that interference will surely become necessary, the question arises as to the time at which it should be practised. In the other varieties of extra-uterine pregnancy the continued progress of gestation exposes the woman to constant and steadily increasing danger of sudden death. In the abdominal form it not only does not do this, but it is, as has been stated, often the wise course to allow the process to continue until the child arrives at full development.

Let us suppose that either before or after full term of gestation the child has died, and it is pretty certain that the woman carries her dead offspring within the peritoneal cavity. Is it wise on this account at once to interfere by surgical means? I think not. One of the greatest dangers attaching to interference consists in hemorrhage. The longer time that the placenta remains attached after foetal death the more certain is it to become atrophied and consequently less vascular. Another great danger consists in septicæmia. The more thoroughly the foetal envelopes become disorged and atrophic from loss of function, the less likely is this dangerous complication to develop. Judicious delay and cautious waiting for symptoms indicative of approaching trouble are then, in my opinion, decidedly advisable.

But such delay, such waiting are by no means to be carried so far that symptoms of septic absorption shall occur. Non-interference carried as far as this is not less to be deprecated than a rashness which results in intemperate and premature resort to operation.

A fœtus remaining in the abdominal cavity long after the full term of gestation, having lost its life, and being surrounded by intestines after absorption of the liquor amnii, or by a purulent fluid which has replaced it, is always an element of great danger which must become more and more aggravated as time passes. Its removal should be regarded only as a question of time, not of propriety. It is true that instances are on record where such contents have remained in the bodies of unfortunate women for thirty and forty years, but such cases are rare exceptions to the rule, and the impropriety of leaving these women for the remainder of their lives in such peril could be tolerated only in the dark days of abdominal surgery.

I have operated six times for extra-uterine pregnancy, but never have I done so without good reason for believing that delay would be far more dangerous than immediate interference. Out of the six operations, four have saved lives which were in imminent peril. Nevertheless, I am willing to accept as the rule the precept that operative procedure in extra-uterine pregnancy had better, if possible, be delayed until nature points to the channel of extrusion which she selects. The most dangerous of men, however, are those who implicitly, unthinkingly obey rules. The bold and wise surgeon is he who keeps the rule for general guidance, breaking it unhesitatingly when an exceptional indication demands such a course.

No fixed rule can apply to all these cases. The following may guide the practitioner in general, he modifying them to suit the varying indications which may present themselves:—

Before full term, should the child developing in the peritoneal cavity be alive, its growth may be carefully watched, and the end of the ninth month be waited for in the hope of delivering at that time, either by laparotomy or elytrotomy, a living child from a living woman.

Should the child have died early in the pregnancy, delay in interference is advisable, but this should not be carried to the development of septicæmia or hectic.

Should the full term be passed and the child be still imprisoned in its unnatural resting place, the rule should be to wait for evidences of constitutional disorder on the one hand, and to meet its development promptly and decisively by succor on the other.

The most favorable condition for laparotomy is, when the foetal sac is adherent to the abdominal walls, and opening into the peritoneal cavity becomes unnecessary. When the sac is not thus adherent, its walls should be stitched to those of the abdomen, the peritoneum be shut off, and antiseptic injections practised.

If the pregnancy be interstitial, the uterine cavity should be dilated, so that palpation from within it could be practised, and the possibility of incision considered.

In case of rupture of an extra-uterine sac with steadily progressing hemorrhage which threatens life, what course should be pursued? In 1867 Dr. Stephen Rogers, of this city, wrote a monograph strongly advocating laparotomy in these cases for the control of hemorrhage under these circumstances. I feel very sure of the validity of his position, and yet experience proves to me that the field for such interference, from the difficulties of diagnosis, the possibility of the patient rallying, and the usually depreciated nerve state from shock, is a very limited one. In my personal experience of seventeen cases, I have seen but one in which it could have been justified. In that case a lady bled steadily for over forty-eight hours, and although I urged the diagnosis of tubal pregnancy and the propriety of laparotomy very strongly, I was overruled as to both points by a strong consultation. A post-mortem examination showed a foetus near the fimbriated extremity of one tube surrounded by its liquor amnii. The sac was not ruptured, but one vessel on its circumference was, and from this a fatal flow had occurred. Laparotomy would almost surely have saved the life of this patient.

Abdominal surgery is too progressive, too steadily advancing to admit of the application to it of the maxim, "there is no better way of judging of the future than by the past." What was reprehensible in abdominal surgery five years ago, has become safe and practicable to-day, and it is almost certain that the near future will see cases of laparotomy successfully performed for the cataclysmic symptoms resulting from the rupture of extra-uterine foetal cysts. So sure am I of this that I would now assume laparotomy to be the only legitimate resource in these cases where sufficient delay has been practised to convince the practitioner that death is surely approaching.

CHAPTER LIII.

CHLOROSIS.

Definition and Synonyms.—This disease is probably a neurosis of the ganglionic system of nerves. Disordering the control which this system exerts over the functions of organic life, it produces, as symptoms of its existence, impoverishment of the blood, constipation, dyspepsia, palpitation, and menstrual derangements and irregularities.

Although it is probable that it may occur in the male as well as the female, that it is sometimes met with in women who have passed the age of puberty, and as an exceptional occurrence has been known to affect young children, the ordinary period of its invasion is the time of puberty, when the dormant functions of the ovaries are being aroused, and the girl is rapidly passing into the state of womanhood. This fact has led many observers to suppose that it is dependent upon some derangement in ovulation and menstruation, but it is more probable that torpidity of the uterus and ovaries is, like the peculiar blood state which is so characteristic of the disorder, merely a symptom of functional disease in the sympathetic system of nerves.

Chlorosis has been described under a variety of names, as, for example, Anæmia or Spanæmia, a kindred disorder with which it has been commonly confounded by writers; Chloro-anæmia, Green Sickness, Cachexia Virginum, Morbus Virginus, and many others.

Frequency.—It is an affection of great frequency in all civilized and refined communities. The greater the tendency developed by society to luxurious and enervating habits, the more frequently is it encountered. Thus in large cities and the higher walks of life it is of much more common occurrence than in country places, and among the lower classes, where a more natural and healthy existence is passed.

History.—The characteristic feature of the disorder being readily recognizable, and of such a nature as to excite not only attention but anxiety, it has, from the remotest times, received some attention at the hands of physicians. Although, however, allusions to it will be found even in the writings of Hippocrates, Valleix declares that F. Hoffman,¹ who wrote in the middle of the eighteenth century, was the first who ever gave a full and satisfactory description of it. Sydenham,² who flourished in the mid-

¹ De Morb. Virgin.

² Syd. Soc. Ed. of Works, vol. ii. p. 288.

dle of the seventeenth century, describes "The Green Sickness," but disposes of the whole subject, symptomatology and treatment, in exactly ten lines. During the last century the subject has attracted great attention, and, thanks to the investigations of Andral, Becquerel, Rodier, and others, our knowledge of the pathology of the condition has been greatly advanced.

Pathology and Symptoms.—Before approaching this part of our subject, special allusion must be made to a fact which has been already mentioned, that chlorosis and anæmia are frequently treated of as identical affections under the latter appellation. The pathological condition found to exist upon chemical analysis of the blood in the two diseases is often the same, a diminished amount of red corpuscles and in time diminution of all the solid elements of the blood. Many of their symptoms are also the same, as, for example, pallor, palpitation of the heart, dyspnœa, the existence of a loud, systolic, cardiac murmur, etc. In spite of these facts it will be noticed that even those writers who treat of the two conditions under the name of anæmia are forced to note the circumstance that there is a peculiar form of the disease which occurs about the period of puberty, to females only, and which has characteristics not displayed under other circumstances. Prof. Flint,¹ in treating of the etiology of anæmia, says:—

"The obvious causes may be arranged into the three classes just stated, viz.: *First*, causes which involve an actual loss of red globules, as in hemorrhages; *Second*, causes involving a defective supply of material for assimilation; *Third*, causes which occasion expenditure of those constituents of the liquor sanguinis on which the production of red globules is dependent.

"The causes are not always apparent. Anæmia is apt to occur in females at or near the age of puberty, when there has been no loss of blood, no deficiency in alimentary supplies, and no unusual expenditure of blood plasma. Under these circumstances it constitutes the affection to which the name Chlorosis was applied before the anæmic condition was fully understood. If the name be retained, it should be considered as denoting anæmia occurring under the circumstances just stated."

I have introduced this quotation not merely for the purpose of citing the views of the eminent author from whom it is drawn, but as illustrative of the position of those who look upon these disorders as identical as to pathology, and differing only in the period of life at which they are developed. As I proceed with the description of the symptoms, course, and treatment of chlorosis, I hope to be able to justify myself in following the example of Becquerel, Valleix, and many other French writers, in looking upon them as essentially and entirely different in nature.

Several French pathologists, under the lead of Becquerel, of Paris, have

¹ Flint's Practice of Med., 2d ed., p. 62.

of late years advanced the view that chlorosis differs from anæmia mainly in this: that the latter is merely a blood state, while the former is a disease of the nervous system which may or may not produce the latter.

The most striking differences between the two diseases may be thus contrasted:—

ANÆMIA

Is merely impoverishment of the blood due to want of nourishment, from some drain upon the system, or from some poison in the blood.

Can usually be accounted for by discovery of some special cause.

Occurs at all periods of life, to men, women, and children.

Is readily curable by removal of cause, supply of good diet, and administration of iron.

Is always characterized by impoverishment of blood.

Produces a puffy and pale appearance.

Does not ordinarily produce sadness or great nervous disquietude.

Is not especially accompanied by visceral neuralgia.

No special affection of solar plexus of nerves.

Iron always does good.

The cause of the disease being removed, patient will rapidly improve.

CHLOROSIS

Is a disease of the nervous system, and may occur with or without the production of its most common symptom, anæmia.

Cannot usually be accounted for by discovery of special cause.

Occurs in true type usually to girls about time of puberty.

Is affected favorably only by remedies which act upon the nervous system, as alteratives and tonics.

Sometimes exists without impoverishment of the blood.

Produces a light green color.

Commonly produces sadness and nervous disquietude.

Is constantly accompanied by visceral neuralgia.

Pain, uneasiness, or distress commonly referred to solar plexus.

Iron often fails to benefit.

If supposed cause be removed, patient will often improve but slowly.

The rapid development by which the girl becomes a woman and the boy changes to the man is at once one of the most striking, important, and interesting of the physiological processes which take place in the animal economy. The special alterations occurring at this time do not need enumeration here. All that it will be necessary to say is that all this change is coincident with the development of the ovaries in the one case and the testicles in the other, so that the former organs become capable of casting off matured ovules, and the latter of secreting fructifying zoö-sperms. If any accident occur so that growth and development do not take place in ovaries or testicles, the result is that the girl never becomes a fully developed woman, or the boy grows up a shrill-voiced, beardless, effeminate man.

In the lower order of animals, and more especially in the males of many species, interference by castration with development at puberty, gives us still more remarkable results. If two colts be bred in the same stable and from the same stock, and one be castrated and the other left entire, the former will develop into the gentle, slender gelding; while the latter will

grow into the strong-necked, majestic, and vicious stallion. A still more striking contrast will be found to exist between the ox and the bull.

This process of development, which we term puberty, is under the control of the ganglionic, or sympathetic system of nerves, which, at that time, must necessarily be in a condition of excessive susceptibility. It is probable that in that state of exaltation, it is, in the female, often affected by a functional derangement which creates the collection of symptoms to which we give the name of Chlorosis. I say it is probable, for it must be confessed that the theory which I have here stated is merely an hypothesis suggested by clinical observation of such cases, and not supported by post-mortem or other physical evidence.

To state this view in other words; at the critical age of puberty, when a series of important and peculiar changes are being effected through the instrumentality of the sympathetic system of nerves, the system seems, in the female, to be liable to a morbid influence, which, in great degree, paralyzes it, and impairs its functions. Sadness, nervousness, and irascibility mark its onset; then neuralgia develops in the limbs, the head, and the viscera; the appetite is impaired; digestion becomes weak, and dyspepsia, flatulence, and depraved tastes are encountered. The girl craves the most unpalatable and innutritious substances, as, for example, chalk, clay, slate, and other articles of alkaline character; while, at other times, the taste prompts her to consume acids, as vinegar, lemon-juice, pickled vegetables, etc. Usually the process of blood-making is soon disordered, and anæmia sets in, coincidently with amenorrhœa, constipation, palpitation of the heart, sensitiveness along the spine, distress in the solar plexus of nerves, coldness of the hands and feet, and irregular and excessive flushing of the face.

Raciborski,¹ from his allusions to the affection in his work upon "Puberty and the Change of Life," evidently regards its pathology as due to disorder affecting the ganglionic nervous system:—

"Chlorosis is an affection very common with young women about the period of puberty. This is not the place for me to discuss the primary nature or the remote cause of this disease, to inquire if it commences in the alteration of the blood which characterizes it, or if, on the other hand, as appears more probable, the alteration just alluded to is itself a consequence of an affection of an important part, such, for example, as the great sympathetic nerve, which, by its numerous relations, would explain at the same time both this alteration of the blood and various troubles in the digestive, respiratory, and genital organs, and all the disorders of general sensibility."

Upon pressing along the spine, a point of great sensitiveness will usually be found near the seventh cervical vertebra, and others are often dis-

¹ De la puberté, and de l'âge critique chez la femme, p. 240.

covered above and below this. Auscultation reveals a loud, basic, systolic, cardiac murmur, and along the arteries the bruit de souffle can be detected. It is not rare to find the sternum and clavicles very sensitive to pressure; as, likewise, the intercostal spaces.

Most of these are symptoms which mark the effect of the disease upon the nervous system. The peculiar blood state usually engendered has, however, received special attention, and been by many excellent authorities regarded as the main element of the disease. Becquerel,¹ in his excellent article upon this subject, thus sums up the changes which are ordinarily effected in this fluid:—

“1st. The water of the blood is notably augmented, which diminishes the density of this fluid. The amount is represented by the same figures as in anæmia.

“2d. The proportion of the globules is diminished.

“3d. The fibrin is usually found to be normal in amount.

“4th. The fatty and saline constituents retain their normal proportions, as does usually the albumen. In very severe and obstinate cases, however, the albumen is diminished, when we see dropsical swellings as a result.”

German pathologists very generally appear to repudiate the nervous theory of the production of chlorosis, and Rokitsky and Virchow have advanced the statement that severe and incurable cases are due to an aplasia, or, as Virchow would express it, a hypoplasia of the heart and large arteries, and a defective development of the genital system. According to them the disease is of congenital rather than acquired character.

Mode of Development.—Chlorosis generally develops itself very insidiously. In a girl who has previously been in good health, languor, sadness, and aversion to company usually first attract attention. These are followed by palpitation of the heart after exertion, scantiness of the menstrual flow, and a characteristic pale or greenish complexion. Alarm is ordinarily excited by these evidences of approaching disease, and careful scrutiny soon discovers others which have been already alluded to. According to my observation, the first suspicion which usually takes possession of the minds of the friends of the patient is, that pulmonary consumption, or heart disease, is about to develop itself. In some cases, an effusion of serum takes place into the areolar tissue of the body, into the pleural cavities, or into the peritoneum, when even the medical adviser is deceived, and fears that dropsy from Bright's disease, cardiac disease, or chronic peritonitis is about to show itself.

If an error in diagnosis lead to neglect of appropriate treatment, or if, as is worse, the symptoms of the disease be mistaken for those of plethora, as I have more than once known them to be, the gravest features of the

¹ Mal. de l'Utérus, t. ii. p. 490.

affection will show themselves, and a most critical condition be established. *

Causes.—The predisposing causes are well known to be sex and age; but those which absolutely excite the disorder are not so easily ascertained. The causes which are here recorded are probably those which most frequently prove active; but it must be specially stated that, in the majority of cases, no cause whatever can be assigned for the disease.

Great grief, or prolonged mental anxiety;
 Depressing home influences;
 Great fear suddenly excited;
 Deprivation of pure air, exercise, and light;
 Disappointment in love;
 Erotic excitement without gratification;
 Prolonged watching and loss of sleep;
 Nostalgia;
 Excessive mental labor.

The most marked instances of the disease which have fallen under my observation have occurred under the influence of great grief for the loss of a relative, disappointment in love, or home-sickness. Dr. W. H. Hammond, in an interesting article upon this subject, published in the *Psychological Journal* for July, 1868, records a striking instance arising from sudden and extreme fear.

Before leaving this part of the subject, it is proper that I should state that Becquerel, who has done more for the advancement of our knowledge of this interesting affection than any other modern authority, admits these causes with considerable reserve. They “can, if they do not produce, at least favor the development of chlorosis,” says he in reference to most of those causes which I have recorded.

Varieties.—I know of no good reason for dividing chlorosis into varieties. In one set of cases, certain symptoms are predominant; in others, a different set of signs assume the ascendancy. It may, however, prove useful to the reader to lay before him the six forms which have been adopted by Becquerel. They are as follows:—

- 1st form, simple chlorosis;
- 2d “ chlorosis with predominance of cephalalgia;
- 3d “ “ “ “ dyspnœa and palpitation;
- 4th “ “ “ “ gastralgia;
- 5th “ “ “ “ menstrual disorder;
- 6th “ “ “ “ general feebleness.

Differentiation.—An aggravated case of this disease may be confounded with anæmia, cardiac disease, tubercular pleuritis or peritonitis, or even with the first stage of tubercular phthisis. From all these a careful and intelligent search for the evidences of organic lesions will usually distin-

guish it in time ; but without watching the progress of the case for a considerable period, it is often impossible to decide as to the diagnosis.

The physician is frequently deterred from arriving at a positive conclusion as to the existence of chlorosis, by imagining that the disorder is identical with anæmia. Drawing from the veins of the patient a drop of blood, he puts it under the microscope, and to his surprise finds it to contain red globules in normal amount, and concludes that his suspicions were incorrect. It is a well-known fact that the disease may exist in aggravated form with little or no blood change.

Complications.—Chlorosis may be complicated by hysteria, hypochondriasis, hypertrophy of the heart, and tuberculosis. In one case which I have seen, chlorosis developed itself with most unmistakable symptoms, and then violent chorea showed itself, which proved fatal after lasting about two years.

Prognosis.—Unless some serious disorder complicate it, the prognosis is always good ; but the course and duration of the disease cannot be predicted. If all the surroundings of the patient, both social and physical, be altered, and all causative influences removed, recovery may be rapid and complete ; but if these changes cannot be brought about, the affection may last for an indefinite time.

Treatment.—Treatment should consist, not in fruitless attempts to overcome one or even two of the results of the disease, amenorrhœa and anæmia, for example, but in a systematic effort to accomplish these three ends :—

- 1st. To remove the cause of the disorder ;
- 2d. To cure the neurosis itself ;
- 3d. To repair the damage which it has effected in the system.

If any one of the causes which have been enumerated be found to exist, it should, as far as possible, be promptly and entirely removed. In many cases the cause cannot be discovered, and in many, if discovered, cannot be removed ; but if search be always made for it, a sufficient number of successes will occur to reward the effort.

Even where the special cause cannot be detected, recovery may be attained by removing the patient from home, and sending her to a distance from objects and people connected with the sadness and depression attendant upon the inception of the attack. A visit to some agreeable watering place or lively country resort, if the patient live in a city, or to some large and busy city, if she reside in the country, will often do more in the way of cure than can be effected by any amount or kind of medication. A sea-voyage and visit to a foreign country will often produce a most excellent result, and sometimes cause complete cure.

Well-regulated exercise in the open air is of great importance. Horse-back exercise, rowing, bowling, walking, playing at croquet, tennis, etc., constitute some of our best nervous tonics. Sea-bathing, and more particularly surf-bathing, is very useful, and should, when attainable, be faithfully

tried. All of these are, however, inferior in value to cheerful and congenial society. This accomplishes a change in the nervous system which nothing else so surely effects.

In the mean time, nervous tonics should be freely given. The best of these are the preparations of the hypophosphites, arsenic, strychnine, and quinine. Should the patient bear it well, the continuous electric current should be employed, and general electrization often proves very beneficial.

As anæmia is usually a complication of the disease, iron is generally indicated. Some of the best preparations are, the saccharated carbonate, iron by hydrogen, dialyzed iron, and the bitter wine of iron. A very excellent combination is offered in the following prescription :—

R.—Ferri vini amari, ℥vijss.

Tr. nucis vomicæ, ℥iv.

Solut. potassæ arsen. ℥ij.—M.

S.—A dessertspoonful in a claret-glassful of water just after each meal.

The diet should be extremely nutritious, consisting of meat, milk, animal broths, eggs, and vegetables, with wine, whiskey, or malt liquors, if they appear to be well borne by the patient.

Should the pathology of severe cases be, as suggested by some of the most eminent German pathologists, an undeveloped state of some of the important organs of the body, of course nothing will result from treatment except palliation by improvement of the existing blood and nerve states.

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